Megapixel
1280 x 960
software zoom

30 Frames/s
VGA (640 x 480)
10 fps Mega

-22°F to +140°F
Weatherproof
-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af
PoE
network power
even in winter

microphone & speaker
Audio
bi-directional via IP
variable framerates

Video SIP Client
IP Telephony
alarm notify,
cam remote control

Video motion
multiple windows
precision pixel-based

lip-syncronized audio
Recording
event-ringbuffer
30 cams each 30 fps

Live viewing
30 cams at 30 fps
all on one screen

Backlight
safe using CMOS
without mechanical iris

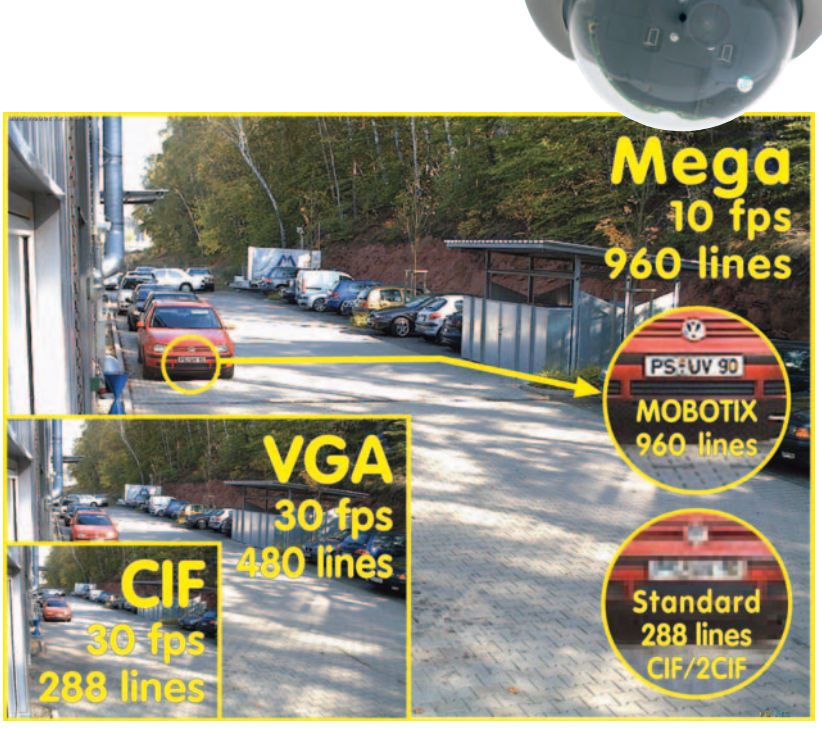
Vandalism-protected
Wall bracket
with cable cover
for RJ45 wall outlet

Robust
no moving parts
fiber glass housing

D22

Camera Manual

Part 1



Complete integration for web and security

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MOBOTIX AG • Security-Vision-Systems • Made in Germany

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Security-Vision-Systems
MOBOTIX

MOBOTIX ... the new face of IP video

MOBOTIX Camera Data

Enter the data of your camera here!

Camera Model: _____

Camera Name: _____

Factory IP Address: ___ . ___ . ___ . ___

Current IP Address: ___ . ___ . ___ . ___

DHCP: activated ❑ deactivated ❑

Admin User Name: _____

Admin Password: _____

D22 Basic

D22 Secure

D22 with Vandalism Set

Note: MOBOTIX offers inexpensive seminars that include a workshop and practical excercises: **Basic Seminar** 3 days, **Advanced Seminar** 2 days. For more information, see **www.mobotix.com**

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Note

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Note

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www.mobotix.com

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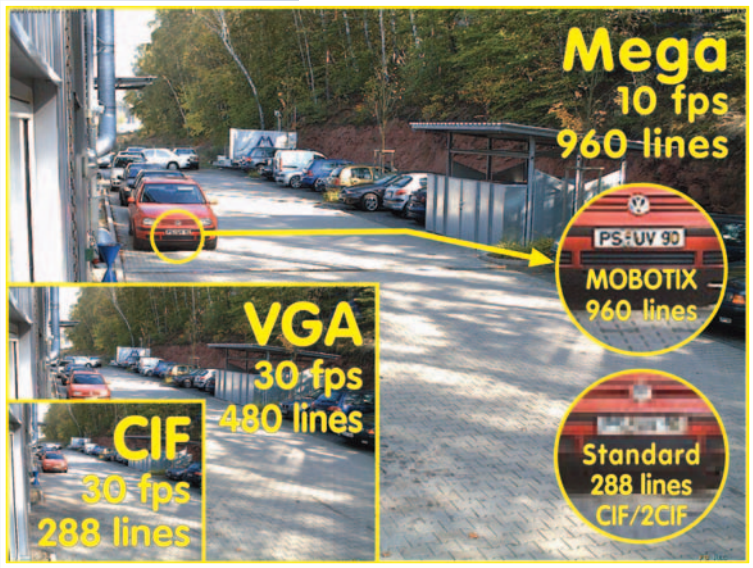
1 INTRODUCTION

30 frames per second!

Everything integrated!

The **D22** cameras are powerful yet compact network cameras by MOBOTIX, which are capable of creating high-resolution live video streams with high image rates. When showing **VGA video (640x480)**, the camera can deliver up to **30 fps**. Even **Megapixel video (1280x960)** will still generate up to **10 fps**. The camera transmits lip-synchronous audio, both in the browser (ActiveX plug-in) and when using **McControlCenter** (external speaker and microphone required; not available on D22-Basic).



Like all other MOBOTIX cameras, D22 models are more than "just a camera"; the integrated software features include a multitude of functions, such as **video motion detection**, **long-term recording**, **alarm messaging** and **video IP telephony**. Unlike in camera systems from other manufacturers, buying and installing additional software on the computer is thus unnecessary.

Because of the low power consumption of only 3 Watts, the MOBOTIX D22 cameras feature the highest operating temperature range available from **-30 to + 60°C (-20 to 140°F)**. Since MOBOTIX cameras neither fog up nor require heating, power can be supplied via the network cabling using standard PoE products. D22 IT and Secure models are absolutely dust-proof and resistant against water jets (**IP65**; D22-Basic: IP54). When mounted to the **D22 Wall Mount**, the camera can be used in outdoor applications; the wall mount perfectly covers wall outlets, thus providing completely concealed cabling.

D22 models

- **D22-Basic**: The D22-Basic, with a diameter of only 12.9 cm (5 in) and a height of only 8.5 cm (3.3 in) is the most compact and most discrete MOBOTIX camera. The camera is weatherproof (IP54) and thus suited for outdoor use.

D22-Basic (IP54)

Note

The **D22-Basic** is the right choice for web cam applications and simple monitoring tasks.

- **D22-IT/Secure**: The D22 IT and Secure models feature additional functions and security features. Among other things, you can connect an external speaker and microphone, store images and video sequences on an external file server (including audio) and call the camera using SIP video*. MOBOTIX also provides accessories for indoor and outdoor applications and vandalism-prone areas. The camera is weatherproof (IP65) and thus suited for outdoor use.

D22-IT and Secure (IP65)

* Accessories required: external microphone and external speaker

Note

D22 IT and Secure models are the right choice for more sophisticated surveillance applications.

Accessories for the MOBOTIX D22

- **D22 On-Wall Set**: This set can reliably protect external cables if the cables cannot be guided from below the housing but have to be led above the wall for technical or legal reasons. In addition, the On-Wall mount provides ample space for extra modules (batteries, WiFi, ...).

D22 On-Wall Set (IP65)

- **D22 Vandalism Set**: The D22 Vandalism Set provides added protection for D22 cameras. The set consists of a robust camera ring made of stainless steel and a reinforced dome made from 3 mm thick polycarbonate. A camera with vandalism set is perfectly suited for applications in demanding environments (such as prisons, social hot-spots, train stations, etc.).

D22 Vandalism Set (IP65)

The stainless steel camera ring is available in five versions:

- matt
- polished
- white powder-coated
- black powder-coated
- silver powder-coated

D22 Vandalism Set in different material and color versions

In order to better adapt the camera to the surroundings, the Vadaism Set is available in the following versions:

- **Stainless steel, matt**

- **Stainless steel, polished**

- **Stainless steel, white powder-coated**

- **Stainless steel, black powder-coated**

- **Stainless steel, silver powder-coated**

D22 In-Ceiling Set

- **D22 In-Ceiling Set**: The D22 In-Ceiling Set allows mounting the D22 camera in fake ceilings, for example. This type of installation provides optimum protection for the camera and reduces the visible profile to a minimum since only the dome is visible.

- **D22 Wall Mount**: The D22 Wall Mount is the ideal solution for mounting the D22 to walls for indoor and outdoor applications. The camera is absolutely dustproof and resistant against water jets (IP65). The wall mount also covers RJ45 wall outlets and also has ample space for additional modules.

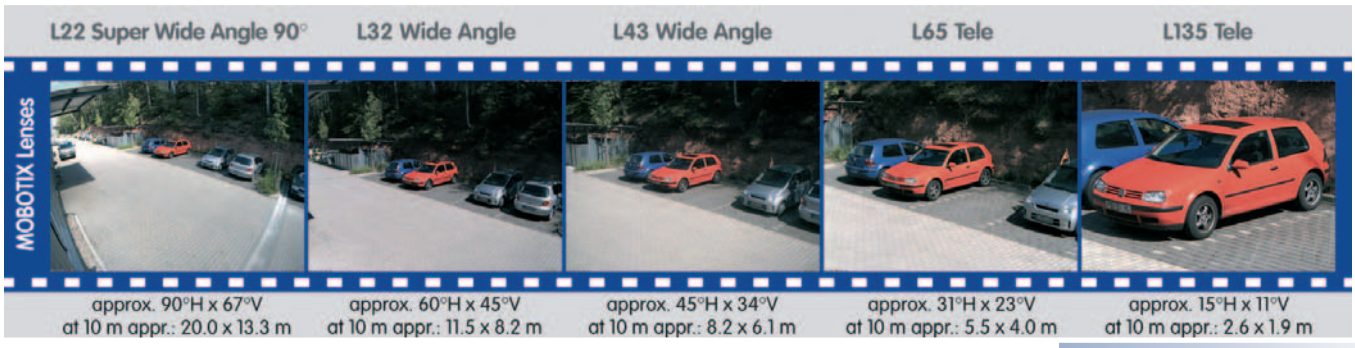
D22 Outdoor Wall Mount made from sturdy PBT 30GF
(IP65)

- **D22 Corner and Pole Mount***: If you would like to mount the MOBOTIX D22 to the corner of a building or a pole, you should consider using the MOBOTIX Corner and Pole Mount, which is used in combination with the wall mount. The supplied stainless steel straps allow fixing the mount to poles with diameters between **60 and 180 mm (2.4 to 7.1 in)**.

D22 Corner and Pole Mount: Outdoor quality made of 3 mm stainless steel

* The appearance and the dimensions of the D22 Corner and Pole Mount may change

- **Lenses, sensors**: You can choose between five different lenses for the MOBOTIX D22 (M14 thread). IT and Secure models can be ordered either with a daylight image sensor (**color**) or a night image sensor (**black and white**).


MOBOTIX Lenses
L22 Super Wide Angle 90°
L32 Wide Angle
L43 Wide Angle
L65 Tele
L135 Tele
approx. 90°H x 67°V
at 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V
at 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V
at 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V
at 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V
at 10 m appr.: 2.6 x 1.9 m

1.1 MOBOTIX Cost Benefits

1. **Increased resolution reduces amount of cameras**
   960-line, high-resolution sensors give a better overview and allow monitoring an entire room with just one camera from the corner

2. **Reduced installation costs at any distance**
   Standard Ethernet connection enables the use of common network components such as fiber, copper and wireless (WiFi)

3. **Intelligent recording technology reduces storage**
   Decentralized recording technology in the camera software puts less strain on PCs and reduces the amount of storage PCs (DVRs) by 10 times

4. **Event-controlled image rate minimizes storage cost**
   Event-driven, automatically adjusted recording frame rate based on event or sensor action reduces amount of data and storage costs

5. **No additional power and no heating required**
   Anti-fogging without heating allows usage of standard PoE technology to power the system via network and saves costs of power cabling

6. **Backup power requirement reduced by 8 times**
   Low power consumption, 3 Watt, enables year-round (no heating required) PoE with one centralized UPS from installation room via network

7. **Robust and practically maintenance free**
   Fiberglass-reinforced composite housing with built-in cable protection and no mechanical moving parts (no autoiris) guarantees longevity

8. **No software and no licence costs**
   Control and recording software is integrated in the camera and is free of charge; new functions are available via free software downloads

9. **Unlimited scalability and high return on investment**
   While in use, more cameras and storage can be added at any time; image format, frame rate & recording parameters can be camera specific

10. **Additional functions and other extras included**
    Audio support, lens, wall mount and weatherproof housing (-30° to +60°C, -22° to +140°F) included; microphone & speaker available in certain models

1.2 MOBOTIX Technical Advantages

1. **Progressive-scan instead of half-frame blur**
   Megapixel sensor and image processing inside the camera with digital white balance generates sharp and true color images at every scale

2. **Sun and backlight compensation**
   CMOS sensor without auto iris, digital contrast enhancement and configurable exposure measurement zones guarantee optimum exposure control

3. **Dual camera technology: 2-in-1**
   Two possible camera views with picture-in-picture technology or 180° panoramic view; one Dual-Fixdome camera with 2.5 megapixel is enough

4. **Long-term, high-performance Terabyte recording incl.**
   Event detection and ring buffer recording by the camera itself allow recording of 40 smooth video streams on a single PC (1200 VGA images/s)

5. **Simultaneous recording, event search and live viewing**
   Live video for multiple users, recording and event search simultaneously possible in seconds from anywhere in the world via network

6. **Very low network load**
   Efficient MxPEG video codec, motion detection based recording and video buffering inside camera guarantee a very low network load

7. **Bridging of recording during network failures**
   Internal camera ring buffer bridges network failures and bandwidth fluctuations of wireless links (WLAN/UMTS) for several minutes

8. **Day & night maintenance free**
   Unique Day/Night camera technology without moving parts guarantees extreme light sensitivity and ensures long-term reliability

9. **Audio and SIP telephony**
   Lip-synchronized audio (live & recording); each camera is a video IP telephone based on SIP standard with automatic alarm call and remote control

10. **MxControlCenter included**
    Dual screen technology with building plans, free camera positioning, event search, image processing, lens distortion correction and PTZ support

1.3 MOBOTIX D22 Concept

High-resolution live video with up to 30 frames/s at 640x480

The second generation of cameras from MOBOTIX delivers smooth live video display in VGA format with synchronous live audio, yet it keeps the network load to a minimum (approx. 2 Mbps)*. Live video display now matches the performance of analog video systems. When recording, MOBOTIX systems easily outperform analog systems, since MOBOTIX cameras store the high live image resolution and frame rate without compromising image quality. **MOBOTIX technology thus allows simultaneous recording of video from 30 cameras in continuous recording mode on one standard PC at 30 fps each, including audio**.

* Accessories required: external microphone and external speaker

Low bandwidth requirements

MOBOTIX' patent pending **MxPEG** streaming format allows fast live video with audio at extremely low network load (1 to 2 Mbps). Since the MOBOTIX camera itself detects movements in the image (and not the computer), video is only transmitted if movements occur, and when the video and audio data are being stored.

Voice over IP and ISDN (with accessories)

Moreover, **MxPEG** provides for lip-synchronized audio and two-way communication between the camera and your computer. Room surveillance with audio is possible* using Internet Explorer or MxControlCenter. Alarm notification on your mobile or via Internet telephony is just as easy as event-controlled voice messages directly from the camera (D22-IT/Secure require an external speaker and microphone).

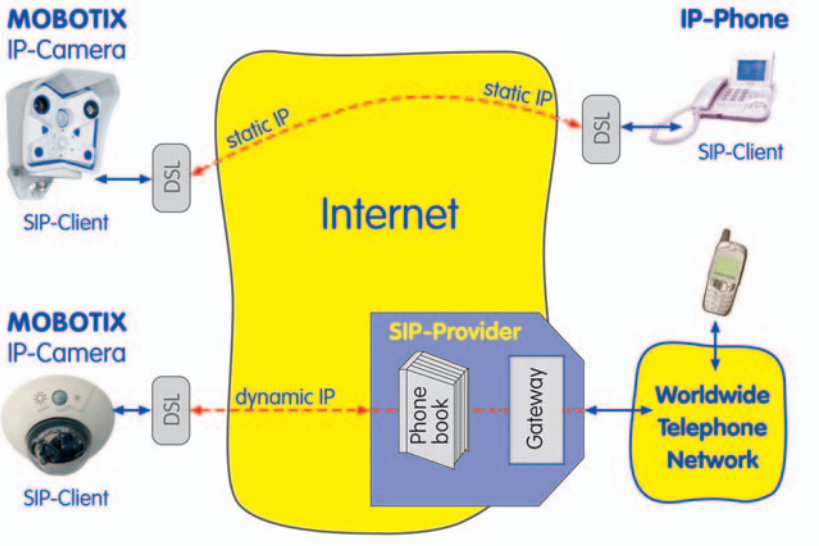
*D22-IT and Secure models also allow connecting an external speaker and microphone; D22 cameras do not have an integrated speaker or a microphone

IP Telephony!

IP telephony and video SIP (with accessories)

All telephone features can be used via Internet telephony thanks to the integrated SIP client. The SIP client allows remote-controlling the camera using the touchtone keys and also makes the alarm calls of the camera. **Video SIP** allows establishing audio/video connections to the camera using Windows Messenger or similar applications (e.g. CounterPath X-Lite, Eyebeam).

In order to use VoIP and Internet telephony with the D22, you need an IT or Secure model with an attached external speaker and microphone



Long-term storage included

MOBOTIX cameras (IT and Secure models) feature an integrated long-term storage system for Windows, Linux and Mac OS X computers. Every camera manages its own ring buffer storage space on the shared folder. Thanks to this decentralized technology, 30 live cameras can store images on a regular Pentium 4-class computer with **30 fps each**, including audio (depending on the operating system).

Event storage on SD card

An SD card can be inserted into the integrated slot to increase the internal memory of MOBOTIX D22 IT and Secure models (SD cards will be supported in a future software release). A 2 GB card can permanently store up to 65,000 images in CIF format, 40,000 images in VGA format or 13,000 Megapixel images, which are not lost in the event of a power failure.

If long-term storage on a file server has been set up, the SD card adds yet another layer of security against loss of data, since the SD card can easily bridge longer network outages.

30 live cameras using MxControlCenter

Download MxControlCenter free of charge from www.mobotix.com

Instead of using a web browser, you can also download the free **MxControlCenter** for Windows from **www.mobotix.com**, which allows displaying up to 30 MOBOTIX cameras on one monitor (Linux and Mac OS X versions are currently being developed). In addition, MxControlCenter can process incoming alarms from the cameras and allows comfortably searching and evaluating the alarm video clips (including audio*). The integrated Layout Editor of MxControlCenter provides for quickly creating floor plans by simply dragging/dropping the cameras onto a background image. Load a floor plan as background image, drag&drop the cameras; done.

Event and Time-controlled

Just like event-controlled recording upon detecting movements in the image, the camera can also record when the volume picked up by the microphone exceeds a set trigger value (audio-capable models only*). Using scheduled recording that takes into consideration vacation times and holidays, time tasks can start or stop video recording, uploading of images to a web site or sending of e-mails with video/audio* clips.

* Accessories required: external microphone and external speaker

Remote Alerting

In case of an alarm, MOBOTIX cameras automatically pop up windows or activate other functions at a remote security control center. The cameras can use network/wireless, GSM/GPRS/UMTS (3G) or Internet connections for this purpose (a GSM/GPRS/UMTS modem can be connected to the serial interface of MOBOTIX M12/D12 models).

Day & Night

The Night version of the D22-Secure model delivers crisp and clear images of moving objects even at night since they use a special black and white image sensor. Depending on the lighting conditions, you can use infrared light to enhance the lighting, since the B/W sensor system is IR-sensitive (in contrast to the human eye).

Integrated Power over Ethernet

Power is supplied as **Power-over Ethernet** via the network cabling **using the MOBOTIX power supply** (in combination with the Network Power Adapter), a MOBOTIX **Network Power Rack** (8 to 20 cameras) or a **Network Power Box** (4 cameras), or by using a PoE-compatible switch (according to **PoE standard IEEE 802.3af**).

No heating required—PoE is no problem even in the wintertime!

Since the camera's plastic housing insulates well and is anti-fogging, no additional heating or fans are necessary. This is why MOBOTIX, unlike other manufacturer's cameras, have low power requirements (3 Watts) and PoE can be used every day of the year indoors as well as outdoors for supplying power.

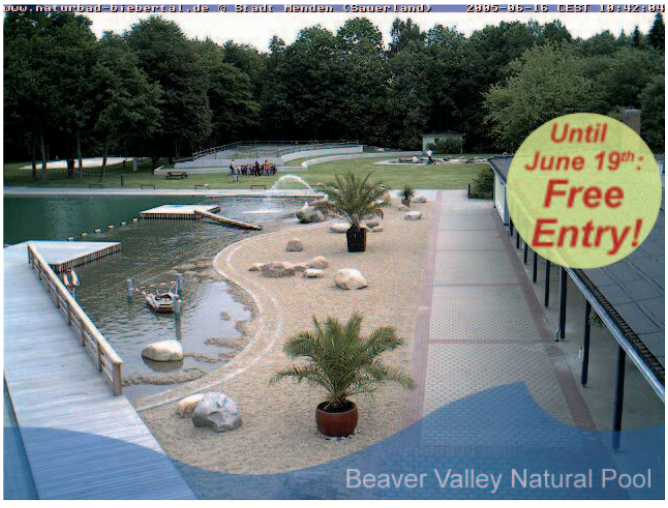
Weatherproof

MOBOTIX D22 cameras are certified according to IP54 (Basic models) or IP65 (IT and Secure models) and are designed for outdoor as well as indoor usage. As the cameras do not have any moving parts, they are extremely robust and resistant against heat or cold (-30 to +60°C; -20 to +140°F).

Logos, Animated or Freestyle

The logo generator of MOBOTIX cameras allows scheduled display of different banners and graphics (or files loaded from any URL) into the current camera images. MOBOTIX cameras are the only network IP cameras supporting animated and transparent graphics.

M10-Web: Megapixel Camera with Logo Generator
multiple logos · free outline with holes · transparency · time driven
Free Contour
1280 x 960 Pixel



1.4 Feature Overview of the MOBOTIX D22

The MOBOTIX D22 includes the following main features (some features are model-dependent):

- **Live images** of up to 1280 x 960 pixels resolution via network and WiFi with up to 30 fps (at 640 x 480 VGA resolution), also adapted for **PDAs**.
- **Digital zoom** with three stages (1x, 2x, 4x) and integrated panning (from 2x: clicking in the browser image will move the zoomed image section in the corresponding direction).
- **True software scaling** using the proven and continuously improved MOBOTIX algorithms, which delivers brilliant images even with smaller image formats (e.g. 320 x 240/CIF).
- **Audio video recording*** with three different recording modes: Event recording with audio, continuous recording with variable frame rate and audio as well as event-controlled Snap Shot recording of JPEG images.
- **Telephony functions (SIP)*** for Phone Call-In and remote-controlling from touchtone phones as well as voice phone calls from the camera for alarm messaging purposes.
- **SIP Video*** (Internet telephony) with support for e.g. Windows Messenger, X–Lite/Eyebeam and video phones.
- **File server tests** can monitor a file server and use one or more of the defined messaging options for error notification.
- **Camera tests** where several cameras monitor one another, with failure notification using the defined messaging options.
- **Playback** of recorded images/video sequences with audio in the integrated video management system.
- **MultiView** screen for displaying multiple cameras or events in one browser window.
- **Event notification** by e-mail, SMS (using a provider), voice notification (Phone Call-Out), sounds and by visual means (e.g. red frame in Live image) using two separate messaging paths.
- **Object tracing** for analyzing the paths of objects that are moving in the image.
- **Logo generator** for displaying logos in the camera images with dialogs for managing image files and defining image and logo profiles for controlling logo display.
- **Logos** can have **transparent areas** and can be displayed partially transparent at the same time (creating a watermark effect), banner rotation and animations are also possible.

* In order to use the audio recording and telephony features with the D22, you need an IT or Secure model with an attached external speaker and microphone

Logo generator

- **Time Tables** for handling customized days, e.g. for **holidays** and **vacations**. The time tables are used to control the camera's arming, image recording, action, messaging, logo, obscure image and other features.
- **Remote signaling** for **master/slave** cameras, with the master camera controlling the arming status of the slave cameras. This allows arming, for example, of all slave cameras by using a key switch that is connected to the master camera.
- **Transfer profiles** for improved handling of FTP, E-Mail, phone calls, network transmissions and messages.

Speaker phone

- **Speaker phone*** for announcements via the camera speaker. listening into a room and intercom mode using **Internet telephony (SIP) and ISDN** (D22 models require an external speaker and microphone).

Telephony features using VoIP connections (Internet telephony)!

- **Phone Call-In*** to remotely control the camera using a touchtone phone via Internet telephony (retrieve camera information, establish Internet connection, announcement of retrieved IP address, intercom feature, etc.).

* Accessories required: external microphone and external speaker

- **MxPEG video compression** using **MxControlCenter** for Windows (Linux and Mac OS X versions are currently being developed). In addition, the ActiveX plug-in for Windows Internet Explorer brings all advantages of MxPEG (including the audio stream to and from the camera*) to the browser-based user interface.
- **Routing** allows using other network connections besides the standard route.
- **DynDNS client** for accessing the camera using a symbolic name (e.g. `mymobotixcam.dyndns.org`) although the provider is assigning a new dynamic IP address every time the camera connects to the Internet.
- Undeletable **Backup operating system** automatically takes over when rebooting the camera (e.g. when updating the system software has failed due to a power failure), allowing you to restart the update process.

* Accessories required: external microphone and external speaker

- **Enhanced startup options** for the camera (obtain IP address via **DHCP**, announcement of IP address and other network data*, reset to factory default settings, etc.).

Free software updates

Software Updates

MOBOTIX provides **free** software updates on **www.mobotix.com** at regular intervals that improve and expand the camera's functionality. Chapter 6, *Software Update*, in the *Software Manual*, provides detailed information on the process.

M12 D12 M22M D22M	Basic Models	IT Models	Secure Models
Software Features (All Models)			
Digital zoom (2x, 4x) with panning			X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X
Custom exposure windows	X	X	X
Video Motion detection	X	X	X
Time and event control (FTP, email, logos)	X	X	X
Time tables with holidays		X	X
Web functionality (FTP, email)	X	X	X
Quad/MultiView in browser	X	X	X
Recording/Playback in browser	X	X	X
Logo generator, animations		X	X
Single image recording (pre-/post-alarm images)	3	10	50
Terabyte ring buffer (Win/Lin/Mac) via network		X	X
Continuous video/audio recording, 0.2 to 30 fps		X	X
Video/audio recording (event-triggered)		X	X
Event-controlled frame rate with continuous audio		X	X
Flexible event logic			X
Master/Slave arming by one camera			X
Scheduled privacy zones, several areas			X
Bidirectional audio (IP) from/to browser		X	X
Customized voice messages		X	X
VoIP telephony (Audio/Video, SIP)		X	X
Alarm calls to softphones (SIP) e.g. Xten		X	X
Remote alarm notification (via TCP/IP, IP Notify)		X	X
RS232 Data Logger/Terminal		X**/***	X**/***
Programming interface/HTTP API		X	X
Model Limitations			
Image size	VGA	VGA	Mega
Image sensor (color / BW)	Color	Color & BW	Color & BW
Standard lens for software version	L22	L22*	L22*
Audio support (Microphone/Speaker)	-/-	M/S	M/S

* D22 IT and Secure models allow connecting an external speaker and microphone, however, neither is factory-integrated.

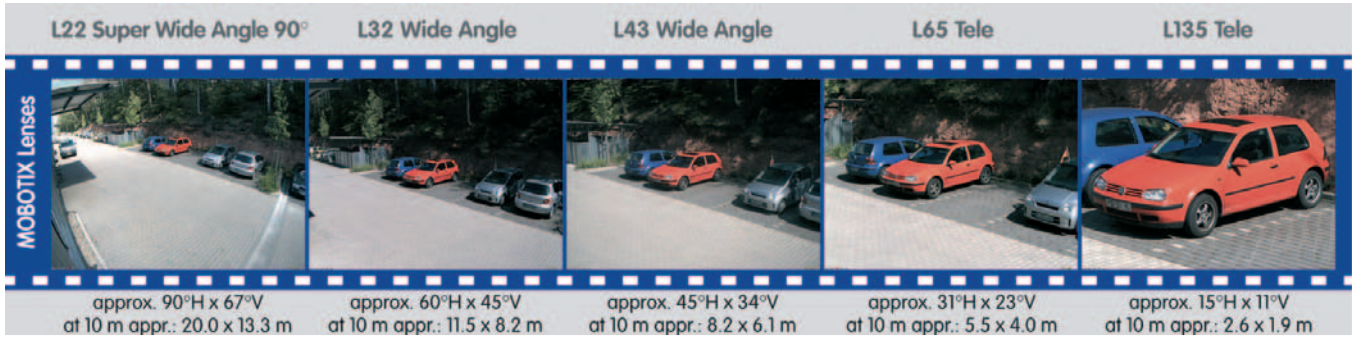
* M12 models delivered with L43 or L22
** M22 models in connection with Cam-IO
*** Not available for D22 models

1.5 Lenses for the MOBOTIX D22

MOBOTIX currently offers five different lenses: from **Super Wide-Angle L22** with 22 mm focal length up to the **tele lens L135** with 135 mm focal length (equiv. to 35 mm camera). Since MOBOTIX cameras are backlight-proof, they do not require a mechanical auto iris. Without the iris as a mechanical component, all MOBOTIX glass lenses are extremely robust and maintenance-free. You can choose between the following lenses for the MOBOTIX D22 (M14 thread):

Available lenses!

- **L22 Super Wide-Angle** 90° image angle (horizontally)
- **L32 Wide angle** 60° image angle (horizontally)
- **L43 Wide angle** 45° image angle (horizontally)
- **L65 Tele** 31° image angle (horizontally)
- **L135 Tele** 15° image angle (horizontally)


L22 Super Wide Angle 90°
L32 Wide Angle
L43 Wide Angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V
at 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V
at 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V
at 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V
at 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V
at 10 m appr.: 2.6 x 1.9 m

The **L22 Super Wide-Angle 90°** lens has very little distortion and excellent image quality, even when using the 4x digital zoom of the D22. If a camera with a Super Wide-Angle lens has been mounted in the corner of a room, the complete room is visible on the image.

L22 Super Wide-Angle 90°

Lens Table

Order name	L22	L32	L43	L65	L135
Original image					
35mm equivalent	22 mm	32 mm	43 mm	65 mm	135 mm
Focal length	4 mm	6 mm	8 mm	12 mm	25 mm
Aperture	2,0	2,0	2,0	2,0	2.5
Image angle horizontally	90°	60°	45°	31°	15°
Image angle vertically	67°	45°	34°	23°	11°
Distance 1 m	**m**	**m**	**m**	**m**	**m**
• Image width	2,0	1.1	0.8	0.5	0.3
• Image height	1.3	0.8	0.6	0.4	0.2
Distance 5 m	**m**	**m**	**m**	**m**	**m**
• Image width	10.0	5.7	4.1	2.7	1.3
• Image height	6.6	4.1	3.0	2.0	1.0
Distance 10 m	**m**	**m**	**m**	**m**	**m**
• Image width	20.0	11.5	8.2	5.5	2.6
• Image height	13.3	8.2	6.1	4.0	1.9
Distance 20 m	**m**	**m**	**m**	**m**	**m**
• Image width	40.0	23.0	16.4	11.0	5.2
• Image height	26.6	16.4	12.2	8.0	3.8
Distance 50 m	**m**	**m**	**m**	**m**	**m**
• Image width	100.0	57.5	41.0	27.5	13.0
• Image height	66.0	41.0	30.5	20.0	9.5

Note

The focal lengths of MOBOTIX lenses do not reflect the actual focal length of the lenses, but the focal length (*Lxx* mm) converted to 35 mm camera format. For example, the MOBOTIX Super Wide-Angle lens has an actual focal length of 4 mm. This would be the equivalent of 22 mm on a 35 mm camera. This lens is thus called *L22*.

Since the image sensors in digital cameras have different sizes, converting to 35 mm camera as a known format provides for better comparing the image formats and the fields of vision of the different lenses. Another benefit is that you can easily set a 35 mm camera (analog or digital) to the same focal length (L**xx**) to obtain the same field of vision. This approach greatly facilitates lens selection.

Focal lengths of MOBOTIX lenses are always given as compared to a 35 mm camera!

To determine the lens you need, simply use a camera with zoom lens to find a matching MOBOTIX lens

1.6 Important Notes

1.6.1 Password for the Administration Menu

Administration menu:
User: admin
Password: meinsm

The administration area of the camera (**Admin Menu** button) is protected by a user name and password:

- User name is `admin`
- Password is `meinsm`

Enter the user name and password exactly as shown above. Note that both entries are case-sensitive.

When accessing the administration menu for the first time, the **Quick Installation** wizard will help you set the most important parameters that are relevant for your requirements. **For security reasons, it is highly recommended to change the adminstrator password after the camera has been configured properly.**

CAUTION: Make sure that you store information on user names and passwords in a secure place. If you loose the administrator password and cannot access the Admin menu, the password can only be reset at the factory. This service is subject to a service charge!

1.6.2 Irreversibly Deactivating the Microphone

The microphone can be irreversibly deactivated!

Deactivating a camera's microphone may become necessary in order to protect the privacy of people at a workplace or for other reasons. It is hence possible to **irreversibly** deactivate the microphone. For additional information on this topic, see section 5.4.5, *Microphone and Speaker*, in the *Software Manual*.

CAUTION: This deactivation is permanent and cannot be reversed even by MOBOTIX engineers. Deactivating the microphone will also deactivate all features that use the camera's microphone.

Note

The D22 also allows connecting an external speaker and microphone. Irreversibly deactivating the microphone will also disable the external microphone features.

1.6.3 Starting the Camera Using the Factory IP Address

If the camera's IP address is not known, you can start the camera with its factory IP address. Section 3.6, *Starting the Camera Using the Factory IP Address*, describes this procedure in more detail.

1.6.4 Resetting the Camera to Factory Defaults

The configuration can also be reset partially

All settings of the MOBOTIX camera can be reset permanently to the factory default settings. This makes sense if you have, for example, obtained a camera without any information or you would like to reset all settings after testing the camera. In order to perform this procedure, you need to have access to the administration area of the camera (**admins** group). Open **Admin Menu > Reset ...** to reset the camera to factory defaults.

Note: All defined users will be deleted and the admin password will be reset to the factory default when you reset the camera using **Admin Menu > Reset ...** Proceed according to section 3.6, *Starting the Camera Using the Factory IP Address*, if you would like to maintain existing users.

1.6.5 Activating Event Control for Security Applications

If the dotted rectangle in the live image is visible, the camera is armed

In its default configuration, the camera's **event control and video motion detection features** are **not enabled**. In order to activate event control as a whole, open **Setup Menu > General Event Settings** and activate the **Arming** switch. Click on the **Arm & Record** softbutton of the user interface in the browser to enable the standard event features. The video motion detection window is visible in the live image (dotted frame in the center) and the camera automatically stores images as soon as the video motion window detects movements.

1.6.6 Deactivating Text and Logo Options

Text and logos can be also deactivated or customized to your liking

As the camera arming has been deactivated in its default configuration (see preceding section), the MOBOTIX camera only displays the Text **WWW.MOBOTIX.COM**, the time stamp and the MOBOTIX logo at the top of the image. Once the camera arming has been activated (see section 1.7.5), the text at the bottom of the live image (event, action and messaging symbols) will also appear.

You can deactivate the status text at the bottom and the text at the top left corner of the live image by setting **Text Display** in the **Setup Menu > Text & Display Settings** dialog to *Off*. Setting **Text Display** to *Date & Time* will only display the time stamp in the live image.

In order to hide the logo in the live image, open **Admin Menu > Logo Profiles** and set **Logo Display** to *Disable*.

Deactivating the camera reboot

1.6.7 Deactivating the Automatic Daily Reboot of the Camera

In its default configuration, the MOBOTIX camera automatically reboots every morning at 3:36 am. The reason for this is that external influences (e.g. radiation in high locations) can lead to camera malfunctions. The automatic reboot will refresh the camera's memory and will ensure proper operation without requiring any interaction on the part of the user.

Open **Admin Menu > Time Tasks** and deactivate or delete the *Reboot camera* task. This will prevent the camera from rebooting automatically.

1.6.8 Using Internet Browsers

Current Internet browsers (Internet Explorer, Netscape, Mozilla, Firefox, Safari, Konqueror, Opera, …) with enabled **JavaScript** can show the camera's live images with their standard settings. Text-based browsers (e.g. **`lynx`**) cannot display the user interface and are *not* suitable for operating the camera.

Section 4.8, *Browser Settings*, in the *Software Manual* contains more information on browser compatibility. For additional information on troubleshooting the camera, see chapter 12, *Troubleshooting*.

1.6.9 Cleaning Instructions

If a lens is dirty (e.g. from the installation process), you can clean the lens using a lint-free cotton cloth.

1.6.10 Safety Notes for Operating MOBOTIX Cameras

Electrical surges can be induced by other electrical appliances, improper wiring, but also from the outside (e.g. lightning strikes to phone or power lines).

MOBOTIX cameras are protected against the effects of small electrical surges by numerous measures. These measures, however, cannot prevent the camera from being damaged when stronger electrical surges occur. Special care should be taken when installing the camera outside of buildings to ensure proper protection against lightning, since this also protects the building and the whole network infrastructure.

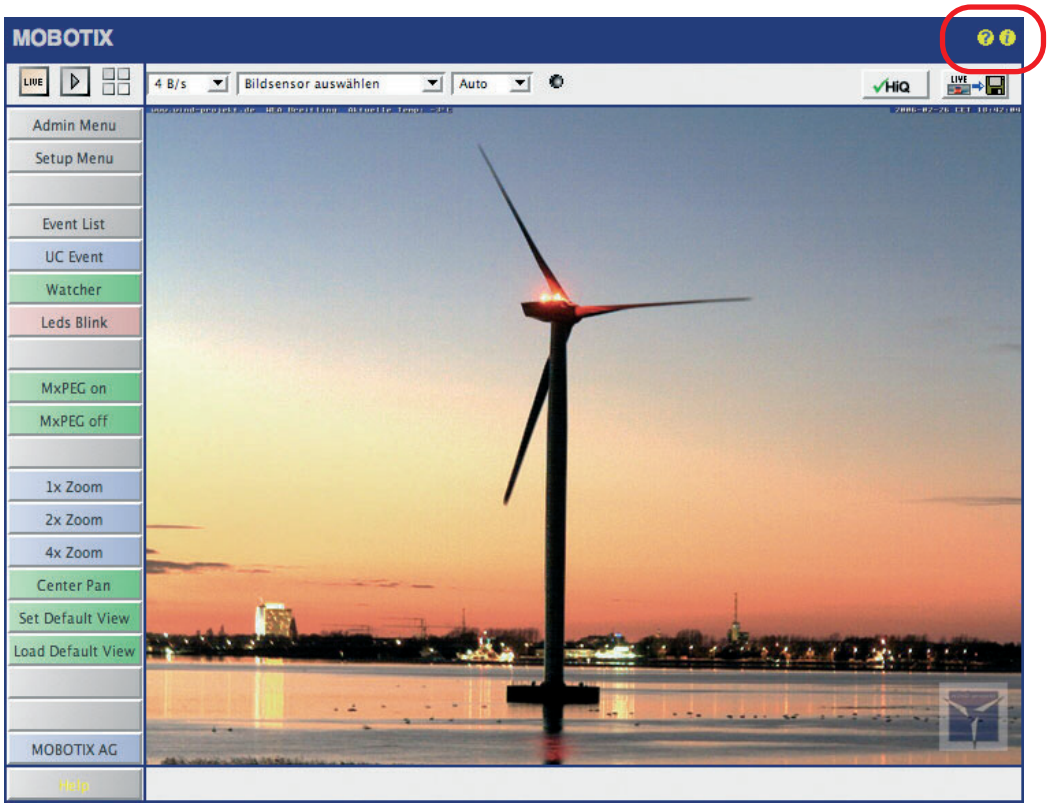
MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and fire prevention as well as the current technology for preventing damages from electrical surges.

Section 2.10.2, *Wiring, Fire Prevention, Lightning and Surge Protection*, contains more information on these topics.

1.6.11 Additional Information

For more information on this topic, see the **News** and **Functional Overview** pages in the **online help** of the camera's browser interface. Click on the yellow icon in the top right corner to open the camera's online help.

In order to obtain more information on the camera and its current configuration, open the **Camera Status** dialog by clicking on the yellow icon in the top right corner of the camera's browser interface.



Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from **www.mobotix.com**. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

Camera Help

Camera status

2 MOUNTING THE CAMERA

2.1 Preparing the Installation

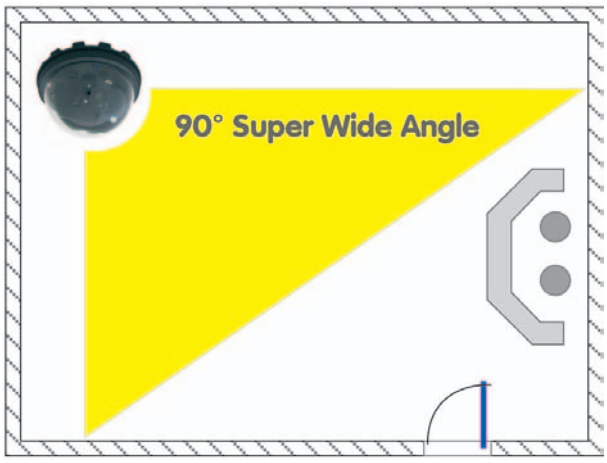
Before mounting the MOBOTIX D22, the following questions should be solved:

1) **Where will the camera be mounted?**
   Mounting the camera to a ceiling or wall, *section 2.1.1*
2) **Which other mounting options are available?**
   On-wall mounting, vandalism protection, wall mounting with Wall Mount, Corner and Pole Mount, in-ceiling mounting, *section 2.1.2*
3) **How is the camera connected to the network and how is the power supplied?**
   Network Power Adapter, Netpower Rack/ Netpower Box, MxPoE or PoE-compatible switch (IEEE 802.3af), *section 2.1.3*.
4) **How are the connections furnished from the building?**
   Wall outlets, *section 2.1.4*
5) **Which sections of the Mounting Instructions should I read?**
   In order to mount the D22 with its optional accessories as quickly and efficiently as possible, you should consult the **Directions for Mounting**, *section 2.1.5*.

The following sections contain a brief overview for all of these questions as well as references to the relevant sections in this manual, which contain more detailed information. For more information on the MOBOTIX D22 and the available accessories, please also refer to **`shop.mobotix.com`**.

2.1.1 Mounting to a Ceiling or Wall

The MOBOTIX D22 has been designed to be mounted to either ceilings or to a wall, when using the Wall Mount. The supplied L22 90° lens then allows monitoring almost the entire room from the walls to the ceiling.



Surveillance of a complete room with only one camera

It is also possible to mount the D22 directly to a wall (without using the Wall Mount), but doing so will result in reduced flexibility for positioning the lens. We hence recommend using the Wall Mount if you intend to mount the camera to a wall.

The cable entry of the D22 is below the center of the camera's housing. For more detailed information on mounting the camera, see sections 2.5 and above; the drilling templates are at the end of the manual.

2.1.2 Additional Mounting Options for IT/Secure Models

On-Wall Mounting

The D22 On-Wall set can reliably protect external cables if the cables cannot be guided from below the housing but have to be led above the wall. In addition, the On-Wall mount provides ample space for extra modules.

D22 On-Wall Set (IP65, also for Outdoor applications)

In-Ceiling Mounting

The D22 In-Ceiling Set allows mounting the D22 camera in fake ceilings, for example. This type of installation provides optimum protection for the camera and reduces the visible profile to a minimum since only the dome is visible.

D22 In-Ceiling Set

Vandalism Protection

The D22 Vandalism Set provides added protection for D22 cameras. The set consists of a robust camera ring made from stainless steel and a reinforced dome made from 3 mm thick polycarbonate. A camera equipped with the Vandalism Set is perfectly suited for applications in demanding environments (such as prisons, social hot-spots, train stations, etc.).

D22 Vandalism set consists of stainless steel ring (IP65, available polished, matt or powder-coated)

Mounting to a Wall Using the Wall Mount

The D22 Wall Mount is the ideal solution for mounting the D22 to walls for indoor and outdoor applications. The camera is absolutely dustproof and resistant against water jets (IP65). The wall mount also covers RJ45 wall outlets and also has ample space for additional modules.

D22 Wall Mount made from sturdy PBT 30GF (IP65)

Mounting to a Pole

If you would like to mount the MOBOTIX D22 to a pole, you should consider using the MOBOTIX Corner and Pole Mount. This mount can only be used in conjunction with the wall mount. The supplied stainless steel straps allow fixing the mount to poles with diameters between 60 and 180 mm (2.4 to 7.1 in).

For more information on the D22 and the available accessories, please consult *section 2.11* and also refer to **`shop.mobotix.com`**.

D22 Corner and Pole Mount: Outdoor quality made of 3 mm stainless steel (in conjunction with Outdoor Wall Mount)

2.1.3 Network Connection and Power Supply, UPS

Power over Ethernet (MxPoE)

Power is supplied to all D22 models via the network cabling (**MxPoE**, **Power-over-Ethernet**). For smaller installations, the universal **power supply** (*MX-SNT-E/U/GB/J/AUS01-30-RJ*) with the MOBOTIX **Network Power Adapter** *MX-NPA-3-RJ* is sufficient. Larger installations would benefit from one or more MOBOTIX **Network Power Racks/Boxes** that are available for supplying power to 4, 8 or 20 cameras (*MX-NPR-4*, *-8* or *-20*).

See section 2.10, *Camera Accessories*, for more information on these and other items or open **shop.mobotix.com** (**Products > Accessories** section).

MX-NPA-3-RJ: Easy installation for smaller systems

MX-NPR-4: For mounting in wiring cupboards; includes DIN rail clip

MX-NPR-8/20: 19" rack mount (2 rack units)

Network Power Adapter
MX-NPA-3-RJ

Netpower Box
MX-NPR-4

Netpower Rack
MX-NPR-20

Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails using supplied adapter (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

Power-over-Ethernet (PoE according to IEEE 802.3af)

The D22 supports the MOBOTIX PoE products for power injection into the network cabling (MxPoE) and the Power-over-Ethernet standard IEEE 802.3af (PoE)

Besides **MOBOTIX MxPoE**, the MOBOTIX D22 also supports the **Power-over-Ethernet standard IEEE 802.3af**. You can hence use switches or routers that support the PoE (Power-over-Ethernet) standard IEEE 802.3af.

Sections 3.3 ff contain more information on the possible combinations of connecting the D22 and power supply options.

PoE components without fans increase overall reliability of the entire system

Note

If you are using **Power over Ethernet (IEEE 802.3af) network components** for supplying power to the MOBOTIX D22, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, the reliability of the entire system is increased and the life cycle of the PoE components is expanded.

Using Uninterruptible Power Supplies (UPS)

In order to maintain a continuous power supply even when utility power fails, you should install an **uninterruptible power supply (UPS)**. These devices also provide full protection against electrical surges and voltage fluctuations and thus enhance the reliability of the system as a whole.

UPS not only protect the camera against power failures, they also protect all other connected network devices against damage from voltage peaks and lows

When using a more powerful 19" rack-mounted USP, you can also protect all other network components (e.g. switches, routers, PoE switches, etc.).

Since MOBOTIX cameras do not require any heating even in the wintertime, the power consumption of 3 W is very low. This in turn means that you can centralize the USP-protected power supply by injecting power into the network cables (max. 100 m/300 ft). This kind of protected power supply can be used either with MOBOTIX MxPoE products (MX-NPA-3-RJ + external power supply or MX-NPR-4/8/20) or with PoE-compliant switches according to IEEE 802.3af.

Typical setup of a 19" system with UPS

2.1.4 Providing the Camera Connections, Wall Outlets

Once the camera position, the position of the cable outlets, and the method of power supply have been decided upon, the cabling should be installed. Before mounting the MOBOTIX D22, you should make sure that the network connections have been properly tested, so that the proper functioning of the camera is guaranteed.

If you would like to use an external audio connection, you will have to install an additional **MOBOTIX D22 audio cable** into the camera's housing. Please send an email to **intl-support@mobotix.com** to get more information on this topic.

2.1.5 Directions for Mounting

Once the type of installation, the camera connections and the method of power supply have been decided upon, you should follow the directions listed below. This will ensure that you will only have to read the relevant sections of this chapter, which will speed up mounting the D22.

Directions for Mounting	
Preparatory Tasks	**Sections**
All camera versions	***2.1*** *Preparing the Installation*
Camera Version	**Sections**
D22-IT/Secure	***2.2*** *Delivered Parts, Components and Dimensions*
D22-Basic	***2.3*** *Delivered Parts, Components and Dimensions*
Type of Installation	**Sections**
Mounting to a Ceiling	***2.5.1*** *D22-IT/Secure - Mounting the Camera* ***2.5.2*** *D22-Basic - Mounting the Camera*
Mounting to a ceiling using the On-Wall Set	***2.2*** *Delivered Parts, Components and Dimensions D22* ***2.4.1*** *Delivered Parts, Components and Dimensions* ***2.5.1*** *D22-IT/Secure - Mounting the Camera* ***2.6*** *Mounting Using the On-Wall Set*
Mounting to a ceiling using the In-Ceiling Set	***2.2*** *Delivered Parts, Components and Dimensions D22* ***2.4.2*** *Delivered Parts, Components and Dimensions* ***2.7*** *Mounting Using the In-Ceiling Set*
Mounting the Vandalism Set	***2.2*** *Delivered Parts, Components and Dimensions D22* ***2.4.3*** *Delivered Parts, Components and Dimensions* ***2.8*** *Mounting Using the Vandalism Set*
Mounting to a wall using the Wall Mount	***2.2*** *Delivered Parts, Components and Dimensions D22* ***2.4.4*** *Delivered Parts, Components and Dimensions* ***2.9*** *Mounting Using the Wall Mount*
Mounting to poles	***2.4.5*** *Delivered Parts, Components and Dimensions Corner and Pole Mount* ***2.4.4*** *Delivered Parts, Components and Dimensions Wall Mount*

Additional Mounting Options for D22 IT/Secure Models

Notes:

2.2 D22-IT/Secure: Delivered Parts, Components and Dimensions

2.2.1 Delivered Parts and Components D22-IT/Secure

Make sure to check the delivered parts!

Camera housing (item 1) with mounting ring (item 9)
4 wood screws 4.5x60 mm (item 12)
4 dowels 8 mm (item 10)
4 washers ø5.3 mm (item 11)
Lens (item 2)
Lock ring (item 3)
Outer shell (item 8)
∅ 160 mm/6.3 in
Dome (item 4)
4 Allen screws M4x16 mm (item 14)
4 washers ø4.3 mm (item 15)
Allen wrench (item 6)
Torx wrench (item 13)
Toothed wrench (item 7)
Ethernet cable (item 5)

Item	Count	Part Name
1	1	Camera housing
2	1	Lens
3	1	Lock ring
4	1	1 transparent dome
5	1	Ethernet cable CAT5 0.5 m/20", installed
6	1	Allen wrench 3 mm
7	1	Toothed wrench
8	1	Outer shell
9	1	Mounting ring
10	4	Dowels 8 mm
11	4	Stainless steel washers Ø 5.3 mm
12	4	Stainless steel wood screws with Tox head 4.5x60 mm
13	1	Torx wrench TX20
14	4	Stainless steel Allen screws M4x16 mm
15	4	Stainless steel washers Ø 4.3 mm

2.2.2 Camera Housing and Connections D22-IT/Secure

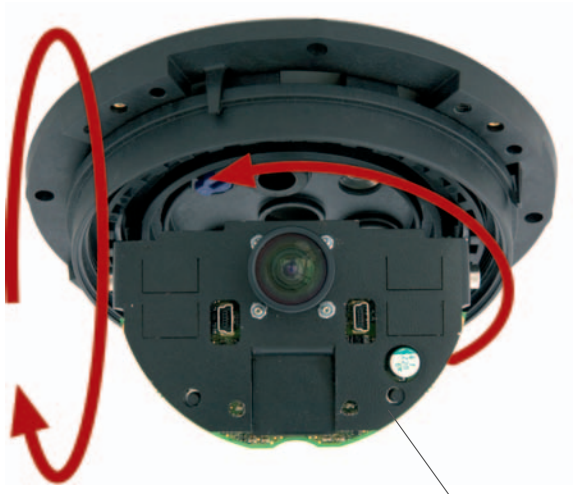
The MOBOTIX D22-IT/Secure consists of the camera housing (motherboard, lens, dome), the outer shell and the mounting ring.

Connections

- NET (Ethernet network/power supply)
- External audio support (Microphone/Speaker)
- Mini MxB/MOBOTIX bus (for future extensions)
- Slot for SD card (usable with a future software version)

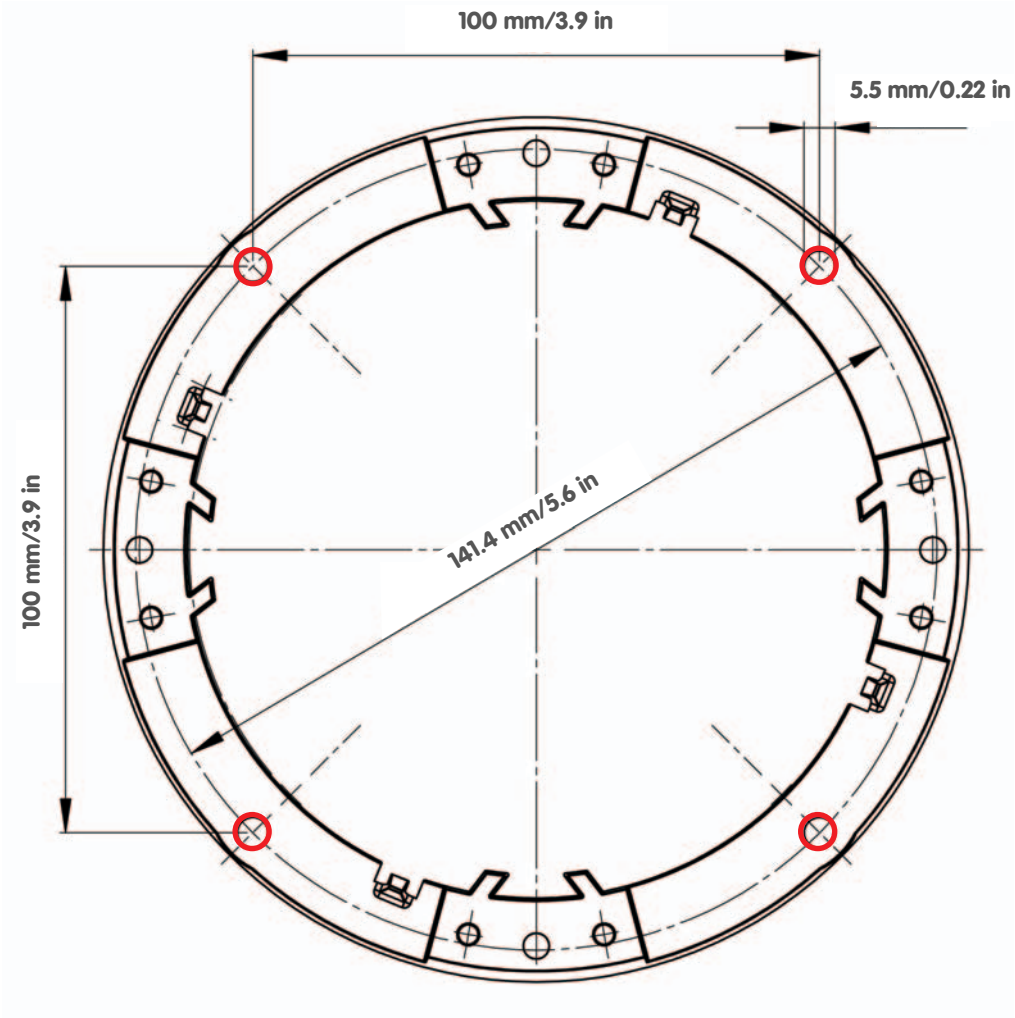
SD cards will be supported in a future software update

2.2.3 Dimensions of the D22-IT/Secure



Freely positionable camera module

2.2.4 Drilling Template for the D22-IT/Secure Mounting Ring



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

2.3 D22-Basic: Delivered Parts, Components and Dimensions

2.3.1 Delivered Parts and Components D22-Basic

Make sure to check the delivered parts!

Camera housing (item 1)
4 wood screws 4.5x60 mm (item 12)
4 dowels 8 mm (item 10)
4 washers ø5.3 mm (item 11)
Lens (item 2)
Lock ring (item 3)
Toothed wrench (item 7)
Dome (item 4)
4 Allen screws M4x16 mm (item 14)
4 washers ø4.3 mm (item 15)
∅ 129 mm/5.1 in
Allen wrench (item 6)
Torx wrench (item 13)
Ethernet cable (item 5)

Item	Count	Part Name
1	1	Camera housing
2	1	Lens
3	1	Lock ring
4	1	1 transparent dome
5	1	Ethernet cable CAT5 0.5 m/20", installed
6	1	Allen wrench 3 mm
7	1	Toothed wrench
10	4	Dowels 8 mm
11	4	Stainless steel washers Ø 5.3 mm
12	4	Stainless steel wood screws with Tox head 4.5x60 mm
13	1	Torx wrench TX20
14	4	Stainless steel Allen screws M4x16 mm
15	4	Stainless steel washers Ø 4.3 mm

2.3.2 Camera Housing and Connectors D22-Basic

The MOBOTIX D22-Basic consists of the camera housing with the motherboard, the lens and the dome.

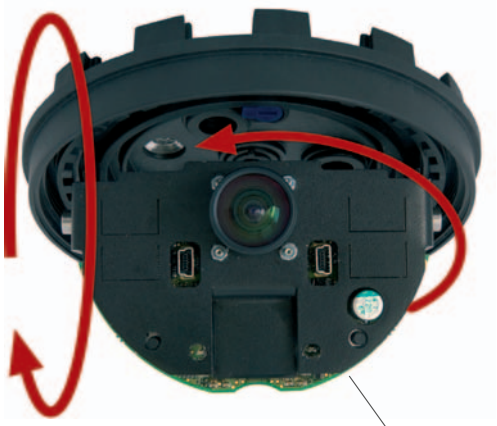
Connections

- NET (Ethernet network/power supply)
- For external loudspeaker (Basic models only provide DHCP announcement)

The MOBOTIX bus (MxB) and the SD card slot can only be used in D22-IT and Secure models using a future update of the camera software

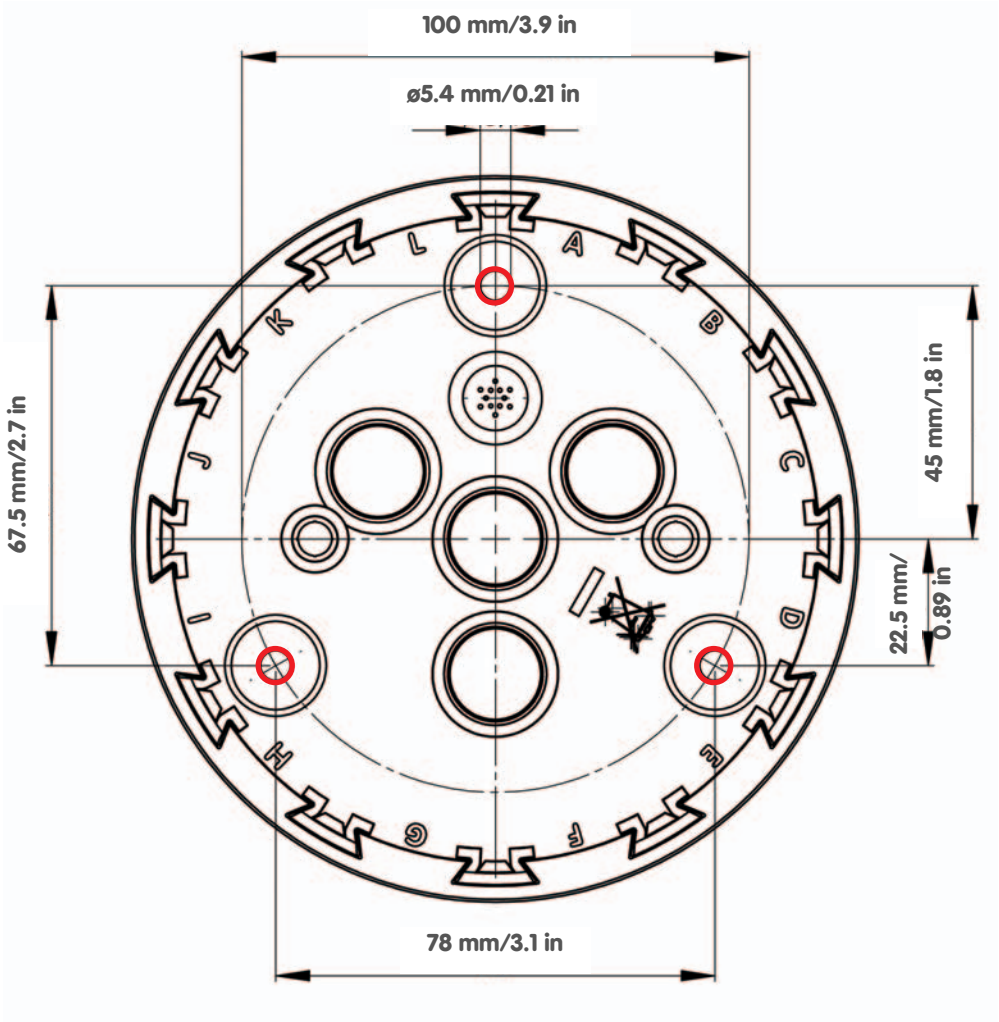
The external loudspeaker of the D22-Basic can only announce network data obtained via DHCP

2.3.3 Dimensions of the D22-Basic



Freely positionable camera module

2.3.4 Drilling Template for the D22-Basic



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

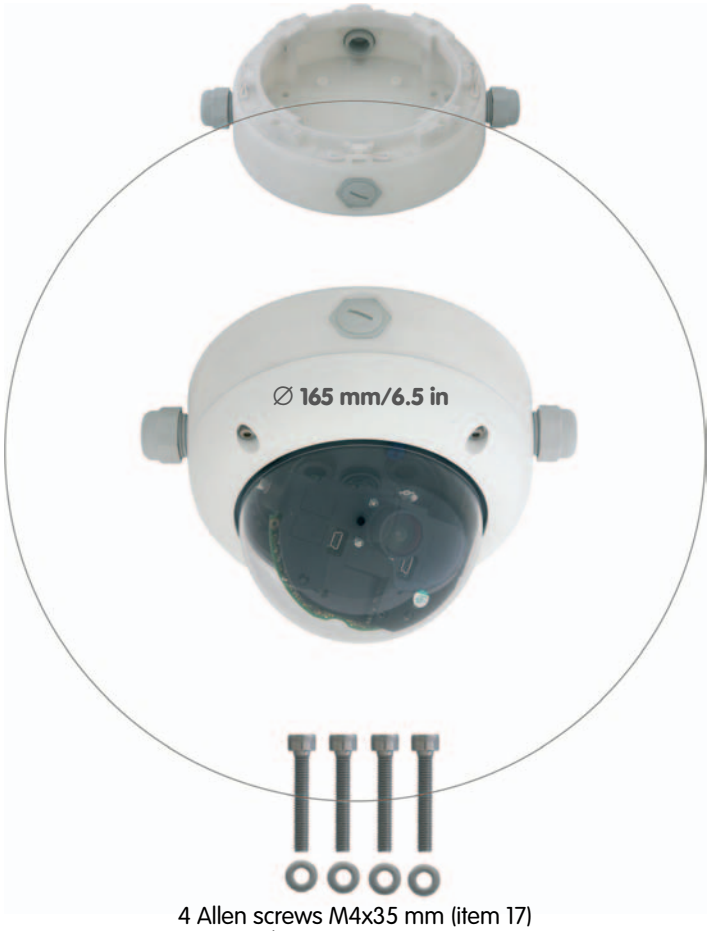
Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

2.4 Camera Accessories: Delivered Parts, Components and Dimensions

2.4.1 D22 On-Wall Set

The D22 is not included in the delivery of the On-Wall Set!

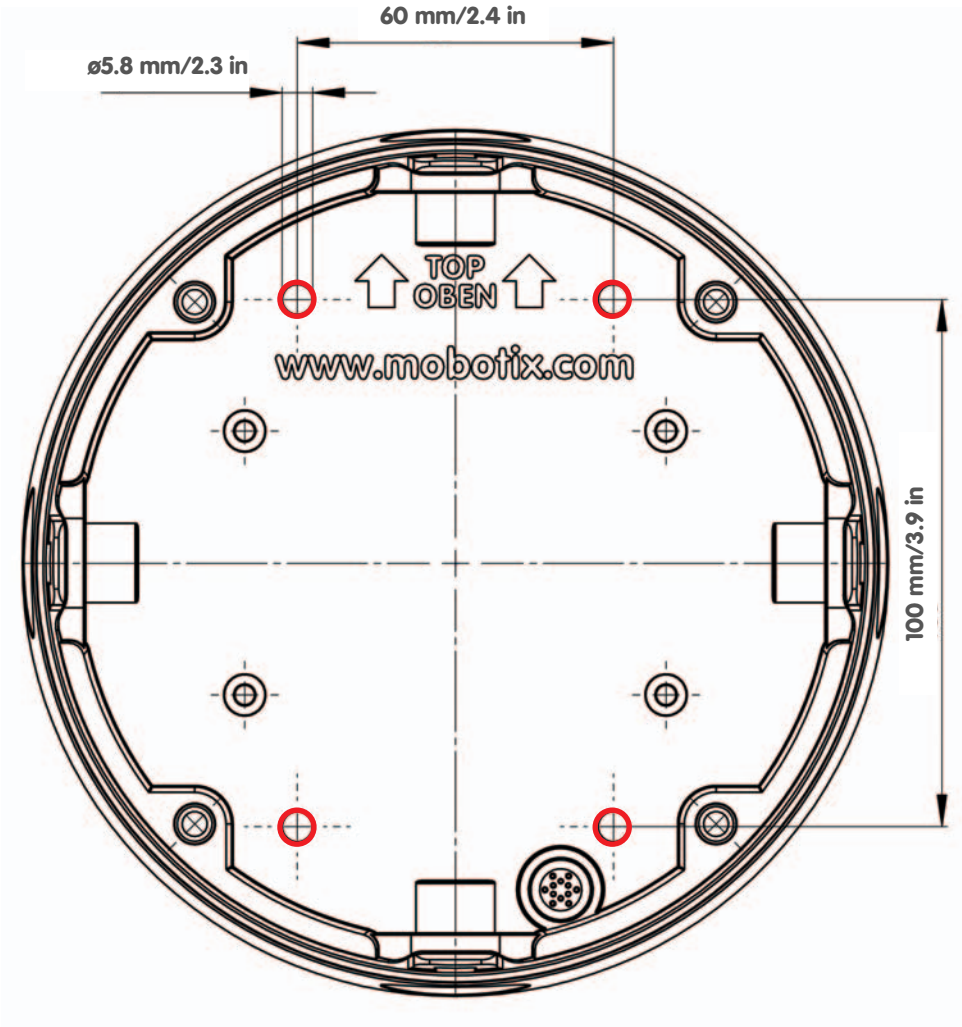
Mounting set (item 16)



4 Allen screws M4x35 mm (item 17)
4 washers ø4.3 mm (item 18)

Item	Count	Part Name
16	1	Mounting set for D22
17	4	Stainless steel Allen screws M4x35 mm
18	4	Stainless steel washers Ø 4.3 mm

Drilling Template for the D22 On-Wall Set



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

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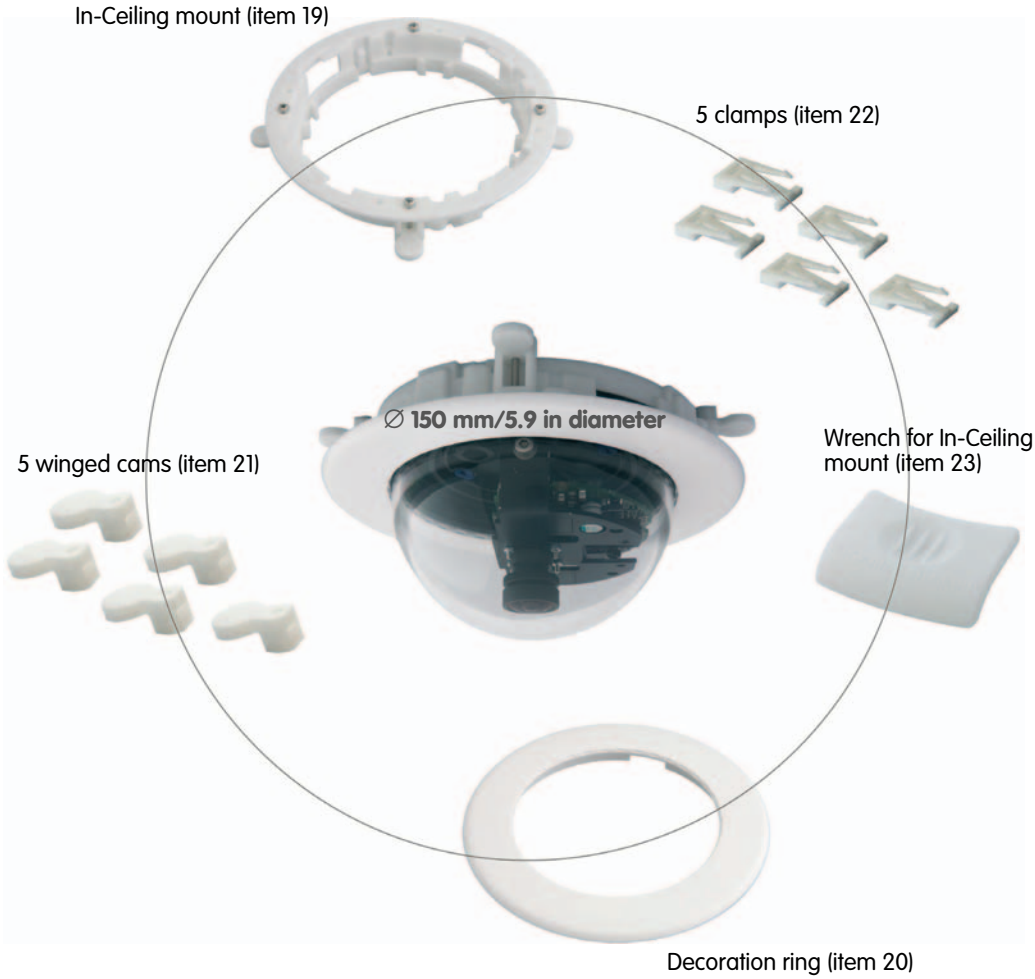
Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

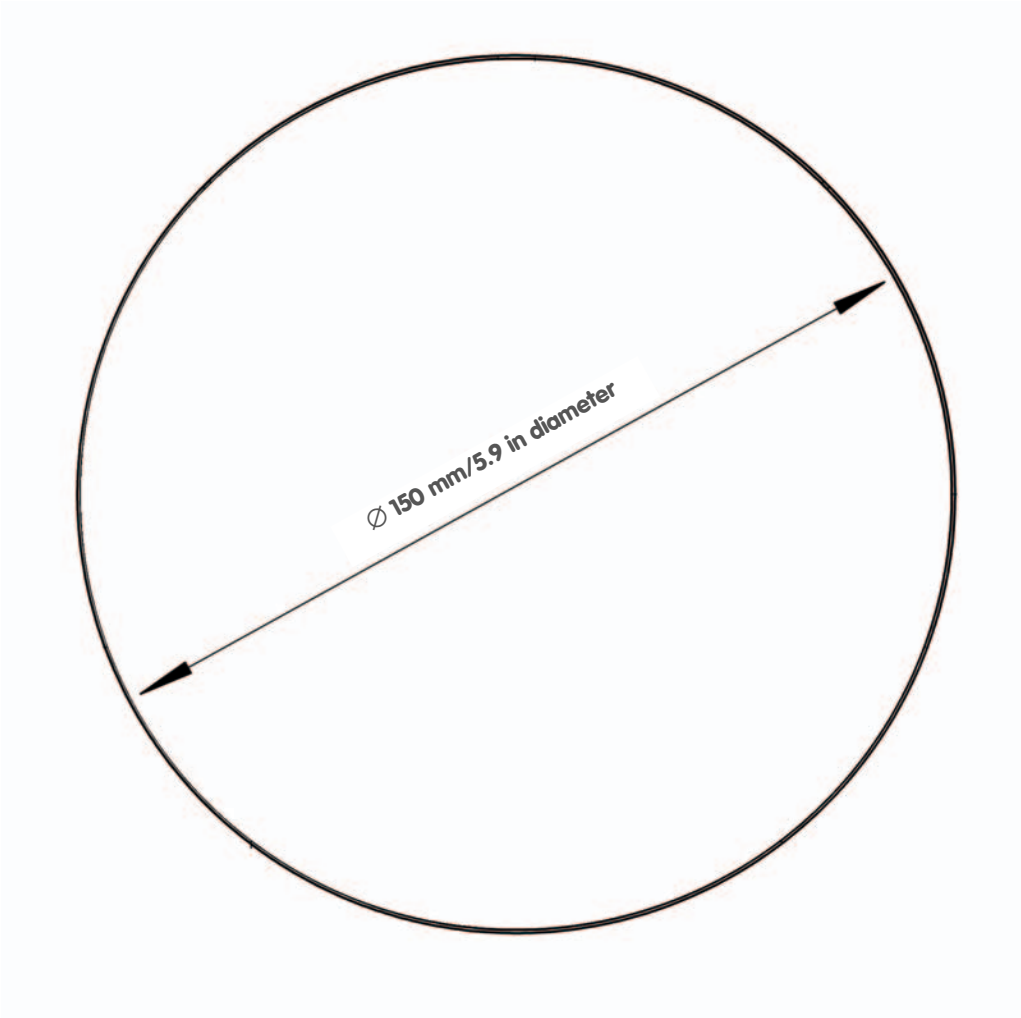
2.4.2 D22 In-Ceiling Set

The D22 is not included in the delivery of the In-Ceiling Set!


In-Ceiling mount (item 19)
5 clamps (item 22)
∅ 150 mm/5.9 in diameter
5 winged cams (item 21)
Wrench for In-Ceiling mount (item 23)
Decoration ring (item 20)

Item	Count	Part Name
19	1	In-Ceiling Set for D22
20	1	Decoration ring
21	5	Winged cam
22	5	Clamps
23	2	Wrench for In-Ceiling mount

Drilling Template for the D22 In-Ceiling Set



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

2.4.3 D22 Vandalism Set

The D22 is not included in the delivery of the In-Ceiling Set!

Available colors of the D22 Vandalism Set

- Matt
- Polished
- Powder-coated (black, white, silver)

4 security screws (item 26)
1 Vandalism ring (item 24)
∅ 160mm/6.3 in
1 reinforced dome (item 28)
4 spacers (item 25)
1 two-hole driver bit (item 27)

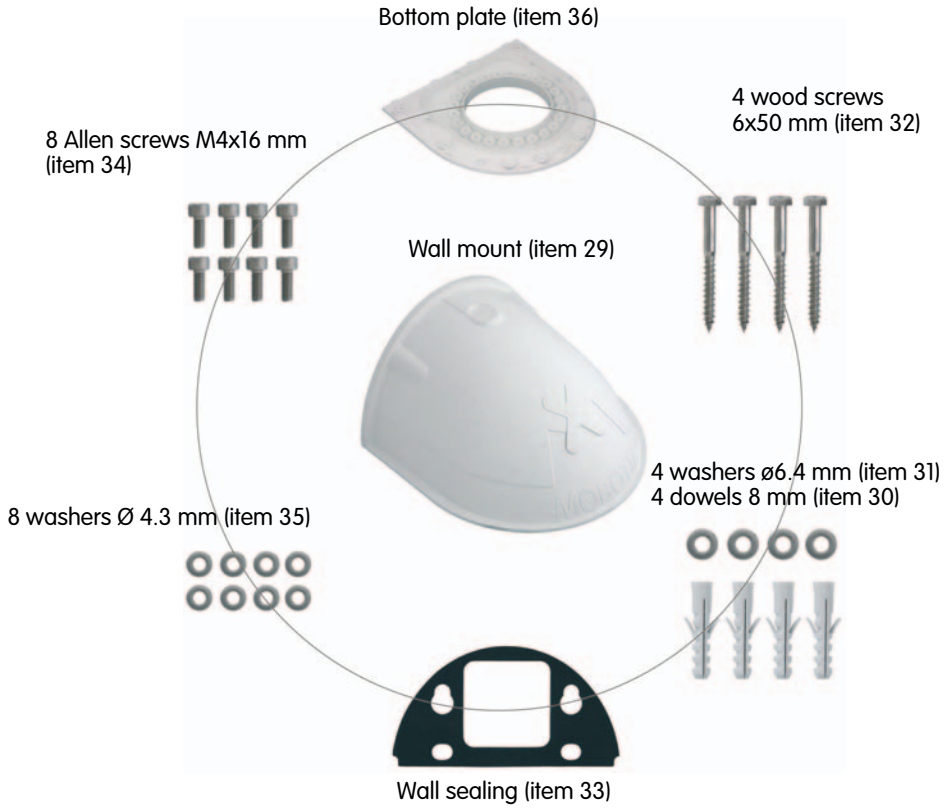
Item	Count	Part Name
24	1	Vandalism ring 2 mm stainless steel for D22 cameras
25	4	Spacers for Vandalism ring
26	4	Security screws M4x16 mm
27	1	Driver bit for security screws
28	1	Reinforced dome 3mm polycarbonate

Available Colors of the D22 Vandalism Ring

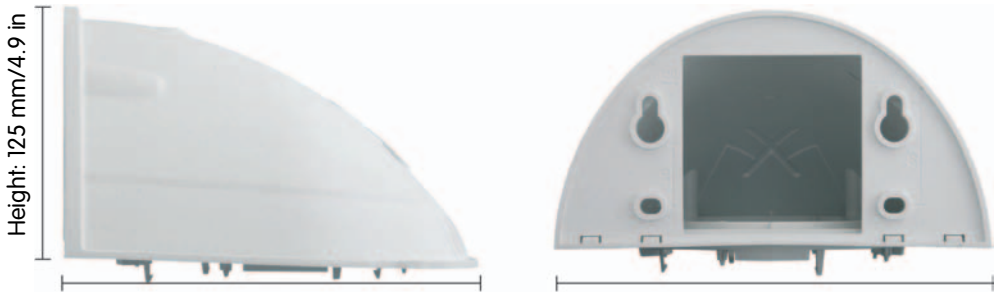
The D22 Vandalism Set provides added protection for D22 cameras. The set consists of a robust camera ring made of stainless steel and a reinforced dome made of 3 mm thick polycarbonate. A camera equipped with the Vandalism Set is perfectly suited for applications in demanding environments (such as prions, social hot-spots, train stations, etc.).

Available Colors

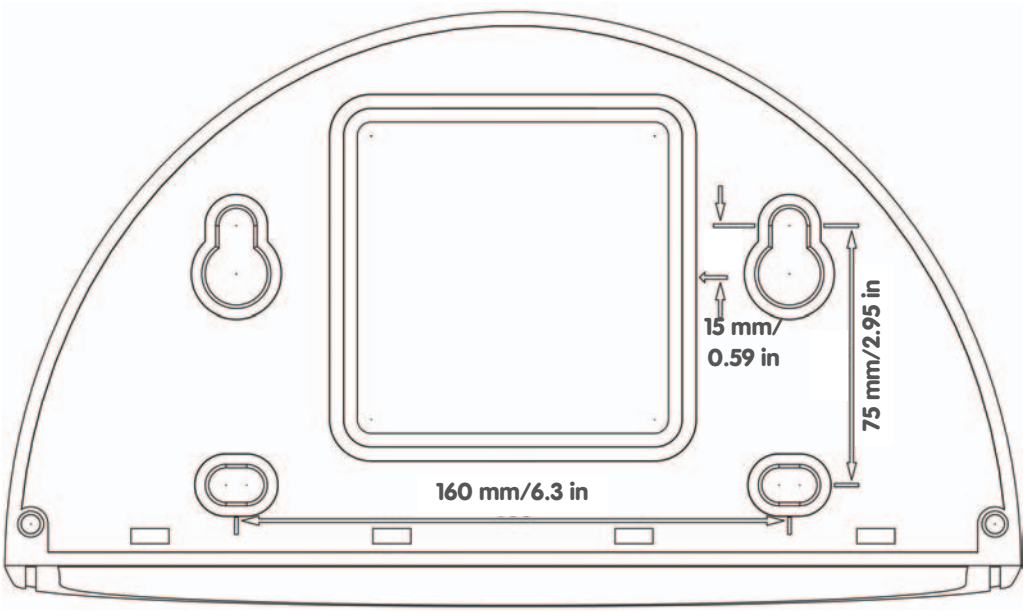
2.4.4 D22 Wall Mount


Bottom plate (item 36)
4 wood screws
6x50 mm (item 32)
8 Allen screws M4x16 mm
(item 34)
Wall mount (item 29)
4 washers ø6.4 mm (item 31)
4 dowels 8 mm (item 30)
8 washers Ø 4.3 mm (item 35)
Wall sealing (item 33)

Item	Count	Part Name
29	1	Wall Mount
30	4	Dowels 8 mm
31	4	Stainless steel washers Ø 6.4 mm
32	4	Stainless steel wood screws with hex head 6x50 mm
33	1	Wall sealing
34	8	Stainless steel Allen screws M4x16 mm
35	8	Stainless steel washers Ø 4.3 mm
36	1	Bottom plate



Drilling Template for the D22 Wall Mount



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

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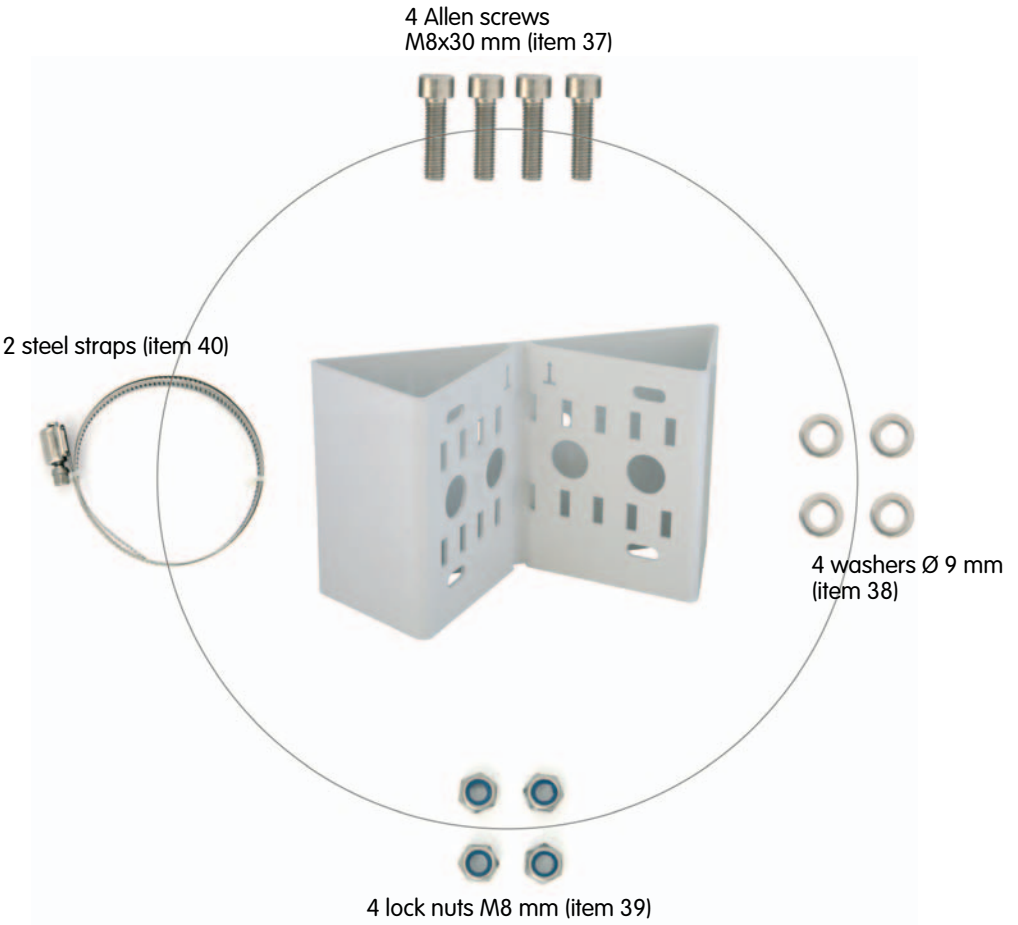
Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

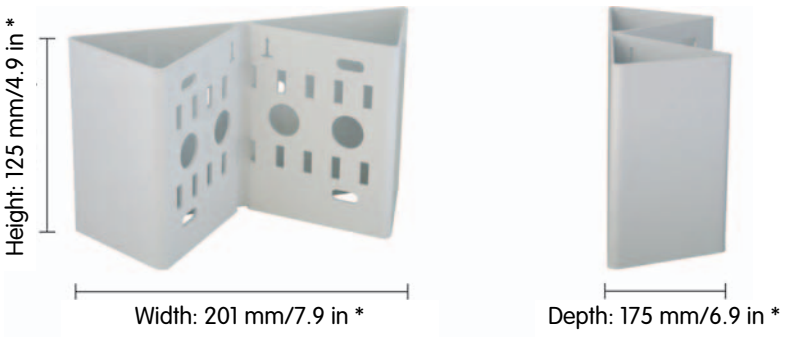
2.4.5 D22 Corner and Pole Mount

The Corner and Pole mount can only be used in conjunction with the D22 Wall Mount

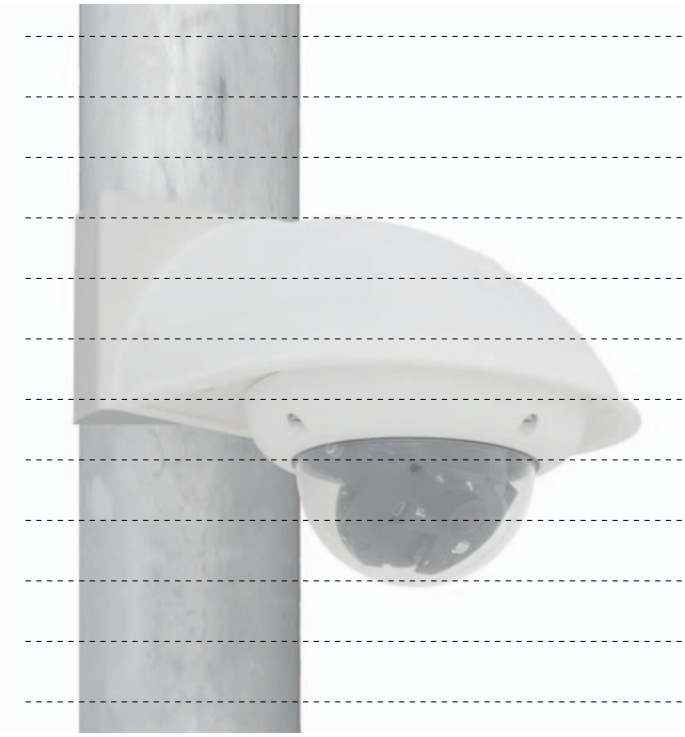


Item	Count	Part Name
37	4	Stainless steel Allen screws M8x30 mm
38	4	Stainless steel washers Ø 9 mm
39	4	Stainless steel lock nuts M8
40	2	Stainless steel straps

* The appearance and the dimensions of the D22 Corner and Pole Mount may change



Notes:



2.5 Mounting the Camera

2.5.1 D22-IT/Secure

Before mounting the **MOBOTIX D22-IT/Secure**, you need to prepare the network connection and drill the holes for the fixtures:

- **Network connection**: The network cabling is supplied through the ceiling directly above the camera. The cabling is perfectly protected and cannot be seen or damaged. When preparing the installation, you should make sure that the cable runs at least 15 cm (6 in) within the camera housing (excluding the connector itself). This will ensure that you can turn the lens unit freely later on.
  Note: When using a wall outlet (either flush-mounted or on-wall), the D22-IT/Secure will have to be mounted using either the On-Wall set or the Outdoor Wall Mount. The D22-IT/Secure models cannot be mounted directly on top of wall outlets.

Find the folded drilling template for the mounting ring of the D22-IT/Secure models at the end of the manual!

- **Drilling the holes**: Prepare the holes in the ceiling. Make sure that you have the supplied dowels ready for this purpose. Use the supplied drilling template for the mounting ring of the D22-IT/Secure (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

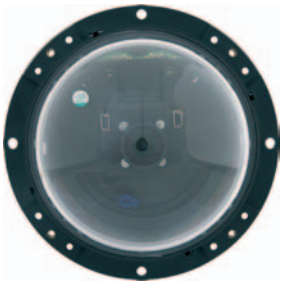
Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. All openings of the camera housing need to be closed off properly. This will ensure that the camera remains weatherproof.

Procedure

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

- Use the delivered screws to affix the camera's mounting ring to the ceiling. The outer shell will be used later in the mounting process.



- Continue with section 2.5.3, *Finishing the Mounting Process*.

2.5.2 D22-Basic

Before mounting the **MOBOTIX D22-Basic**, you need to prepare the network connection and drill the holes for the fixtures:

- **Network connection**: The network cabling is supplied through the ceiling directly above the camera. The cabling is perfectly protected and cannot be seen or damaged. When preparing the installation, you should make sure that the cable runs at least 15 cm (6 in) within the camera housing (excluding the connector itself). This will ensure that you can turn the lens unit freely later on.
  Note: As an alternative, you can also connect the camera above a wall outlet (either flush-mounted or on-wall types). Note, that the cabling remains visible in this case. The D22-Basic model cannot be mounted directly on top of wall outlets.
- **Drilling the holes**: Prepare the holes in the ceiling. Make sure that you have the supplied dowels ready for this purpose. Use the supplied drilling template for the D22-Basic (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Find the folded drilling template of the D22-Basic at the end of the manual!

Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. All openings of the camera housing need to be closed off properly. This will ensure that the camera remains weatherproof.

Procedure

- Remove the camera dome. Take the delivered plastic foil or a cotton cloth and remove the dome by turning it in counter-clockwise direction.

- Unplug the pre-installed network cable from the network connector at the inside of the camera. **Make sure that you do not touch any electronic parts insinde! Static electricity could destroy these parts when touching them.**

- Release the internal part of the camera by turning the ring inside in counter-clockwise direction using the supplied toothed wrench. While doing so, hold the camera at the lens unit to prevent it from turning.

- Disengage the internal part of the camera with the lens unit from the base of the housing.

- Position the base of the camera housing over the drilled holes and the prepared cable exit in the ceiling. If the holes in the base of the housing are closed, push through the holes using a suitable tool or use a suitable drill bit to open the holes. **Caution: These holes will need to stay closed on D22-IT/Secure models.**

  Make sure that the cable is at least 15 cm (6 in) long within the camera housing (excluding the connector itself), as in the factory-installed cable.

  It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. This will ensure that the camera remains weatherproof.

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

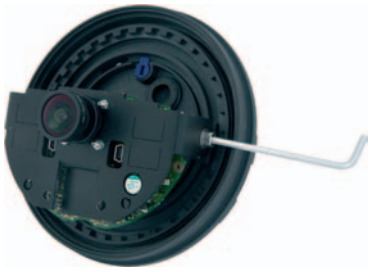
- Use the delivered screws to mount the base of the camera to the ceiling.

  If the cabling from the ceiling is not directly beneath the camera, make sure that the network cable is not damaged by one of the feet of the camera base. When tightening the screws of the camera base, the base will lock the cable in place, thus securing the cable against the ceiling. The cable is now firmly installed and cannot be pulled out or repositioned.

- Insert the internal part of the camera with the lens unit into the mounted base of the housing and secure it by turning the two blue clamps in clockwise direction using the supplied toothed wrench or a screwdriver. This will prevent the internal part of the camera to accidentally fall out of the base before it has been secured. Now secure the internal part of the camera by turning the toothed ring by hand in clockwise direction, as long as you can still easily turn the internal part of the camera.

- Connect the network cable to the network connector of the camera. Make sure that the cable loop is running properly as shown in the figure.

- Position the camera by turning and tilting the lens unit so that it points into the desired direction (**Note**: the SD card slot has to point **downwards** for the camera's live image to be correct). Never use force when adjusting the direction of the camera, as this could damage the camera beyond repair. The internal part of the camera with the lens unit should turn and tilt easily, but it should not reposition itself. This could mean that you have to loosen the Allen screws at both sides of the lens unit using the supplied Allen wrench.



Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

- Continue with section 2.5.3, *Finishing the Mounting Process*.

2.5.3 Finishing the Mounting Process

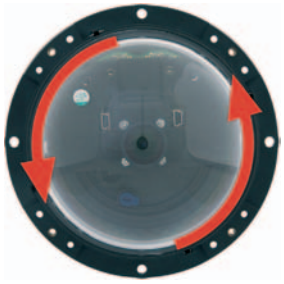
Establishing a Connection to the Camera

- **Establish a connection to the camera** as described in section 3.4, *Establishing a Connection to the Camera*.

Adjusting the Lens, Visual Check

Make sure that you see the live image of the camera on the monitor of your computer or laptop. Now adjust the lens until you see the desired image area on your monitor.

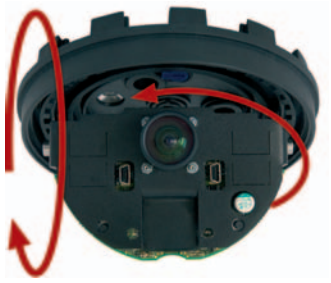
- **Remove the camera dome.** Take the delivered plastic foil or a cotton cloth and remove the dome by turning it in counter-clockwise direction. Make sure that you remove the camera's outer shell on IT/Secure models before you attempt to do this.



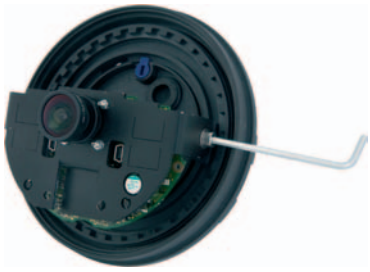
- **Slightly loosen the toothed ring** inside by turning it in counter-clockwise direction using the supplied toothed wrench. **Also slightly loosen the two Allen screws at both sides of the lens unit** by turning them in counter-clockwise direction using the supplied Allen wrench.

  Loosen the outer shell and the Allen screws only slightly, so that you can turn the internal part of the camera and tilt the lens unit without using excessive force. The internal part and the lens unit should not reposition themselves.

- **Fine-tune the image area that is displayed on a computer monitor** by turning and tilting the lens unit accordingly. Never use force when adjusting the direction of the camera, as this could damage the camera beyond repair. The internal part of the camera with the lens unit should turn and tilt easily, but it should not reposition itself.



- Once you are seeing the desired image area, **tighten the Allen screws at the sides of the lens unit** (in clockwise direction) and the **toothed ring** inside the camera. Do not use excessive force when doing so to avoid damaging the camera.



Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

- **Release the lens' lock ring** and **adjust the image focus** by turning the lens in its holder. Check the image on the computer monitor. Make sure that you tighten the lock ring again once you are finished. When tightening the lock ring, firmly hold the lens to prevent it from losing the focus setting.

Lock ring: Secure the lens against vibrations

Caution (only 135 mm Tele Lenses)

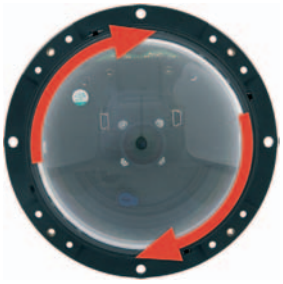
Image Focus: Due to the lens effect of the dome, the focus of the 135 mm tele lens is shifting slightly once the dome has been mounted. Before mounting the dome, the tele lens should be turned about **90° in clockwise direction** (as seen from the lens' front). Make sure that you check the focus of the live image in your browser with the dome installed and re-adjust the lens, if required.

Lenses are adjusted manually

Mounting the Dome and the Camera's Outer Shell

- **Mount the dome.** Take the delivered plastic foil or a cotton cloth, insert the dome into its seat and turn it in clockwise direction. You should once again control the sharpness of the camera image on a computer monitor.

  If required, clean the lens gently using a lint-free cotton cloth before installing the dome. Do not apply excessive pressure onto the glass surface when cleaning the lens!



- **Mount the outer shell** (IT/Secure Models only). Use the delivered Allen screws (or the security screws and the spacers when mounting the outer shell of the Vandalism Set).

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

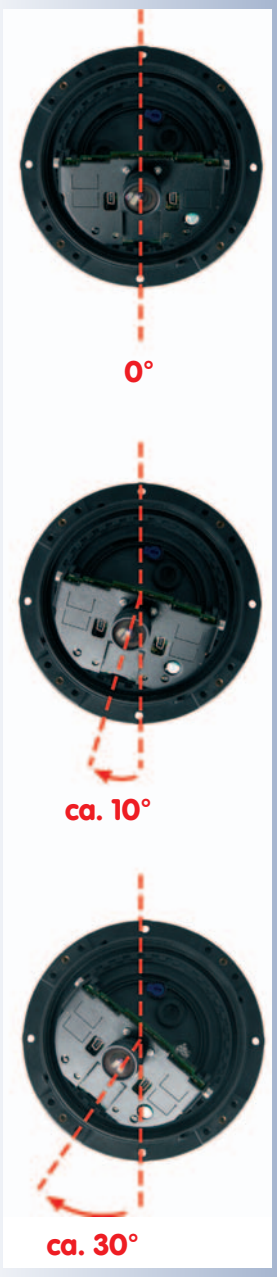
Caution

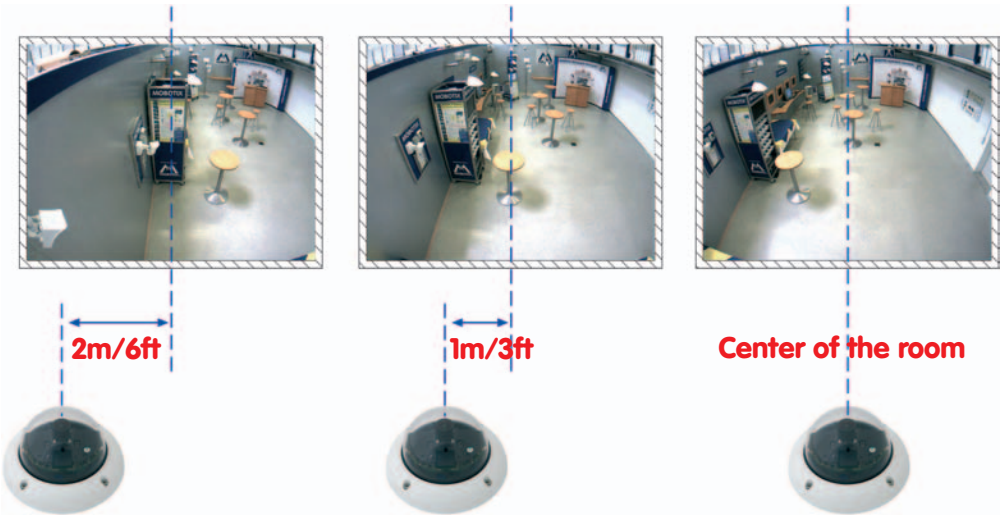
Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. All openings of the camera housing need to be closed off properly. This will ensure that the camera remains weatherproof.

2.5.4 Notes on Mounting the Camera to a Wall Without the Wall Mount

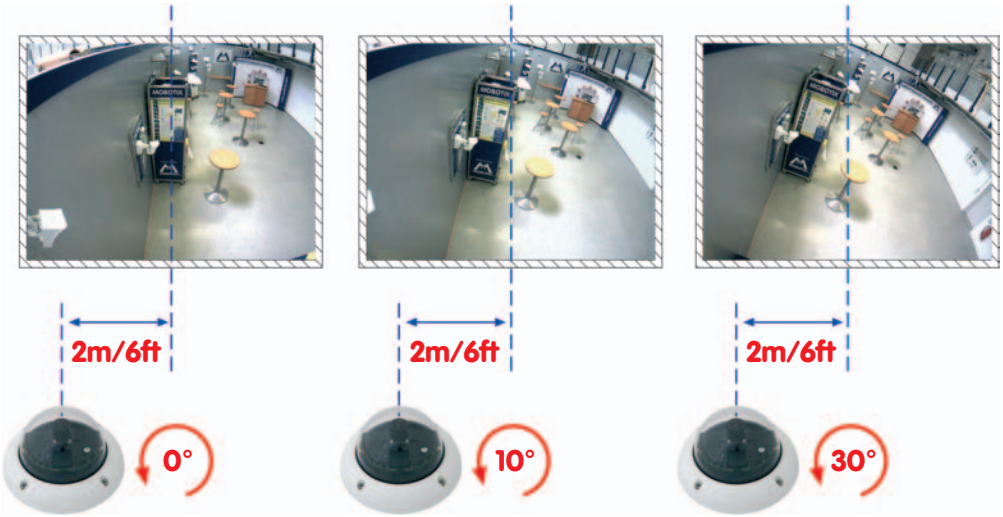
The MOBOTIX D22 has been designed to be mounted to either ceilings or to a wall, when using the Wall Mount. It is also possible to mount the D22 directly to a wall (without using the Wall Mount), but doing so will result in reduced flexibility for positioning the lens. The following section contains some hints on these restrictions and tips for mounting the camera to a wall.

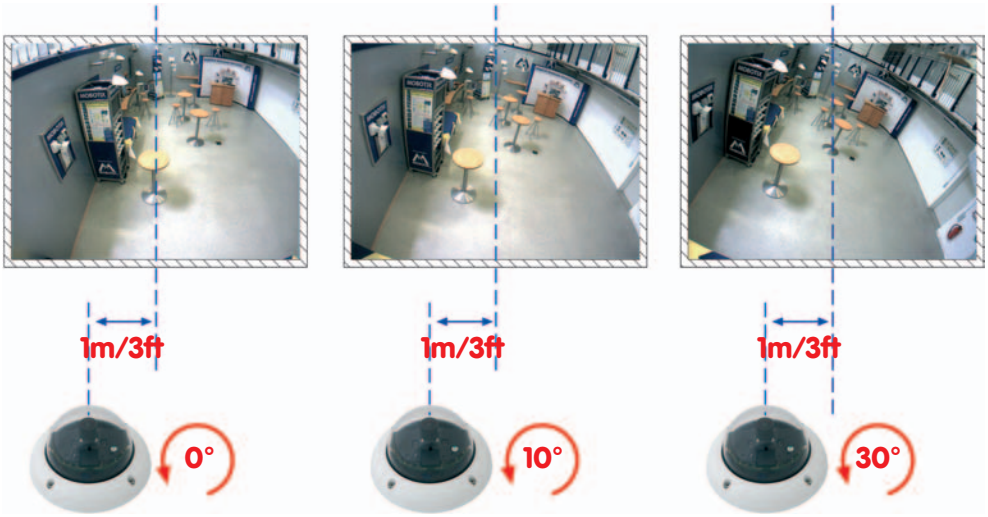
When mounting the camera onto a wall, the camera image will show more wall area (and less room area), the more you move the position of the camera from the center of the wall toward a corner.





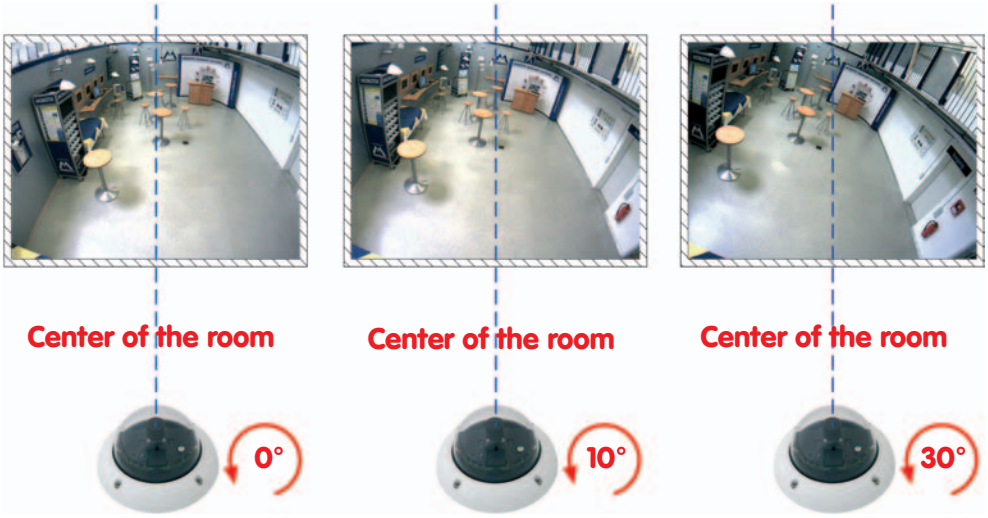
In order to show a larger portion of the room (and less wall area) when using a MOBOTIX D22 mounted to a Wall Mount, you can turn the base of the camera and the lens unit around its vertical axis. The camera image always stays upright. When mounting the D22 directly onto a wall, you can also turn the base of the camera around its vertical axis to show more room area, but the image now appears slightly tilted.





Tilt the camera to see a larger area of the room (camera mounted 1 m/3 ft to the left of the center)

This effect also appears when mounting a D22 at the center of a wall and you are turning the base of the camera. This will also allow to capture a larger area of the room with the camera, but the image is again tilted.



Note

When mounting the D22 to a wall, you should always use the wall mount.

When **mounting the camera directly to the wall** without using the wall mount, you should mount the camera in the **center of a wall**, if you would like to maximize the area monitored by the camera.

If you cannot install the D22 to the ceiling and using the D22 wall mount is also not possible, you should consider using a **MOBOTIX D12** instead. MOBOTIX D12 models are more flexible than the D22 when positioning the camera modules thanks to the larger housing.

2.6 Mounting the D22 to a Ceiling Using the On-Wall Set

Before mounting the MOBOTIX D22-IT/Secure to an indoor or outdoor location using the On-Wall Set, you need to prepare the network connection and drill the holes for the fixtures:

- **Network connection**: You can use any one of the four openings in the On-Wall mount to guide the cabling into the camera. When using the On-Wall Set, you cannot mount the camera directly on top of the wall outlet (regardless whether it's a flush-mounted outlet or an above-the-wall model).

  When preparing the installation, you should make sure that the cable is at least 15 cm (6 in) long within the housing of the On-Wall Set (excluding the connector itself). This will ensure that you can turn the lens unit freely later on. Cable that is too long can be stored easily within the On-Wall mount.

- **Drilling the holes**: Prepare the holes in the ceiling. Make sure that you have the supplied dowels ready for this purpose. Use the supplied drilling template for the D22 On-Wall Set (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Find the folded drilling template of the D22 On-Wall Set at the end of the manual!

Caution

Note that the On-Wall Set can also be used in outdoor applications (IP65). When doing so, make sure that you seal off the holes at the back of the housing using good-quality silicone sealant.

Note

When mounting the MOBOTIX D22 to a wall, you should always use the D22 wall mount instead of the On-Wall Set.

Procedure

Seal off the holes at the back of the housing using silicone sealant!

Do not seal off the condensation vent!

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

- Apply a sufficient amount of silicone around the holes at the back of the housing to prevent water from entering. When doing so, **make sure that you do not block or seal off the condensation vent**!
- Use the delivered screws to mount the On-Wall Set (without the camera) to the ceiling.
- If the cables are guided through one of the openings in the On-Wall Set, insert the cables into the On-Wall mount.

- Disengage the mounting ring from the housing of the D22-IT/Secure. This ring is not required when mounting the camera to the On-Wall Set.

- Connect the network cable to the network cable of the camera using a patch cable connector. Make sure to leave enough unused cable within the housing. This will ensure that you can turn the lens unit freely later on. Cable that is too long can be stored easily within the On-Wall mount.

- Now press the D22 into the guides of the On-Wall mount. The tapered guides on the back of the D22 housing fit exactly into the openings of the On-Wall mount.

- Continue with section 2.5.3, *Finishing the Mounting Process*.

2.7 Mounting the D22 to a Ceiling Using the In-Ceiling Set

Before mounting the MOBOTIX D22-IT/Secure to an indoor location using the In-Ceiling Set, you need to prepare the network connection and drill the hole for the camera:

- **Network connection**: The network cabling is supplied through the ceiling directly above the camera.

  When preparing the installation, you should make sure that you have at least 15 cm (6 in) of unused cable.

Find the drilling template at the end of the manual

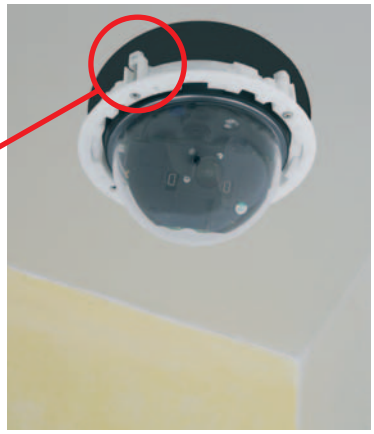
- **Hole for the camera**: Prepare the hole for the camera. The hole should have a diameter of 150 mm (6 in)!

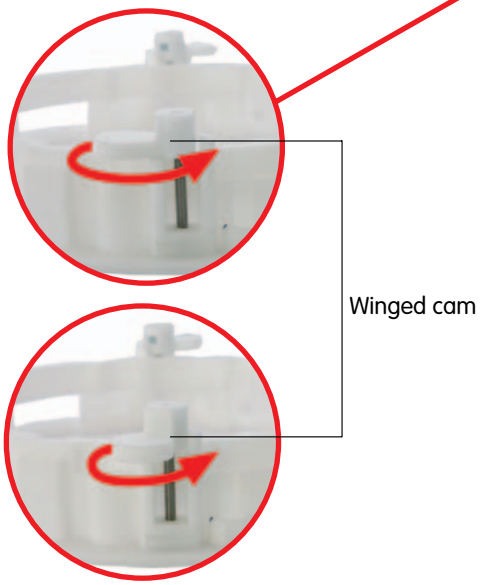
Procedure

- **Insert the camera into the In-Ceiling mount without the outer shell and the mounting ring**. The tapered guides on the back of the D22 housing fit exactly into the openings of the In-Ceiling mount.

- **Connect the network cable** to the network cable of the camera **using a patch cable connector**.

- **Insert the In-Ceiling Set with the camera into the hole in the ceiling**. Tightening the integrated mounting screws will automatically secure the In-Ceiling mount to the ceiling.



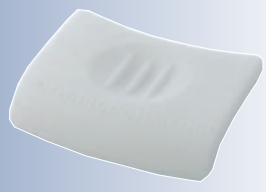


The winged cams automatically secure the In-Ceiling Set in the ceiling when tightening the screws (see detail pictures)

- Finally, **press the decoration ring** onto the mount and lock in place by turning it in clockwise direction.

Dismounting

- Use the **wrench for the In-Ceiling mount** included in the delivery to dismount the decoration ring. Insert the wrench as shown in the figure and turn the ring in counter-clockwise direction.
- Remove the camera.
- Loosen the screws of the In-Ceiling mount (this will automatically retract the winged cams). You can now remove the In-Ceiling mount from the ceiling.



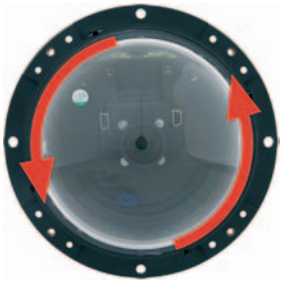
Wrench for In-Ceiling mount

2.8 Mounting the D22 Vandalism Set

In order to install the Vandalism Set, replace the regular outer shell and the Allen screws with the stainless steel shell, the security screws and the four spacers of the Vandalism Set. Likewise, replace the dome of the D22-IT/Secure with the reinforced dome of the Vandalism Set.

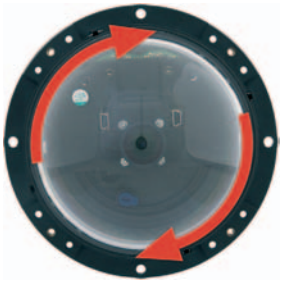
- **Remove the outer shell**. Remove all four Allen screws using the supplied Allen wrench. Take off the outer shell.

- **Remove the camera dome**. Remove the dome of the D22-IT/Secure (by turning it in counter-clockwise direction), then package and store the dome.



- If required, **clean the lens** gently using a lint-free cotton cloth. Do not apply excessive pressure onto the glass surface when cleaning the lens! Make sure that you do not change the lens focus or the lens unit when doing so. You should once again control the sharpness of the camera images on a computer monitor (see section 2.5.3).

- **Mount the reinforced dome of the Vandalism Set**. Use a soft cotton cloth and mount the reinforced dome by placing the dome into its seat and turning it in clockwise direction. If required, clean the dome gently using a lint-free cotton cloth before installing it. You should once again control the sharpness of the camera images on a computer monitor (see section 2.5.3).

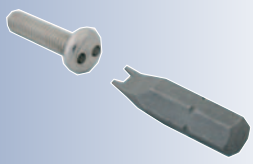


- **Mount the stainless steel shell of the Vandalism Set**. **Do not forget to insert the four spacers of the Vandalism Set into their seats in the camera housing!**

Spacers for Vandalism Set

- **Mount the supplied stainless steel shell** with the security screws and use the supplied two-hole driver bit to firmly tighten the screws.

Security screws and two-hole driver bit



2.9 Mounting the D22 to a Wall Using the Wall Mount

Before mounting the **MOBOTIX D22-IT/Secure** with the Wall Mount you need to prepare the network connection and drill the holes for the fixtures:

- **Network connection**: The network cabling is supplied through the opening in the back of the wall mount. The cabling is perfectly protected by the mount and cannot be seen or damaged. The wall mount can be mounted directly on top of wall outlets (flush-mounted or above-the-wall types; maximum dimensions of the outlet: 88 x 80 mm (3.5 x 3.2 in) width x height).

  Use the factory pre-installed network cable of the D22 (**50 cm** (**20 in**) length). This will ensure that you can turn the lens unit of the D22 freely later on.

- **Drilling the holes**: Prepare the holes in the wall. Make sure that you have the supplied dowels ready for this purpose. Use the supplied drilling template for the D22 Wall Mount (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. All openings of the camera housing need to be closed off properly. This will ensure that the camera remains weatherproof.

Procedure

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

- **Disengage the mounting ring from the housing** of the D22-IT/Secure. This ring is not required when mounting the camera to the Wall Mount.

- **Use the delivered screws to mount the Wall Mount (without the camera) to the wall** (directly on top of the cabling or the wall outlet).

- **Connect the network cable** to the network cable of the camera **using a patch cable connector** (or plug the cable directly into the RJ45 wall outlet). Make sure to leave enough unused cable within the housing. This will ensure that you can turn the lens unit freely later on. Cable that is too long can be stored easily within the housing.

- **Now press the D22 into the guides of the wall mount**. The tapered guides on the back of the D22 housing fit exactly into the openings of the On-Wall mount.

- Continue with section 2.5.3, *Finishing the Mounting Process*.

2.10 Notes

2.10.1 Cleaning Instructions

Cleaning the Dome

- In order to protect the dome from being scratched and from getting dirty, only handle the dome using a soft cotton cloth or the protective plastic of the camera's shipping box.
- You should clean the dome at regular intervals. Always use a lint-free cotton cloth for this purpose.
- If the dirt is more persistent, add a mild alcohol-free detergent without abrasive particles.
- Make sure you instruct cleaning personnel on how to clean the camera.

Cleaning the Lens

- If the lens is dirty from the installation process, clean the lens using a lint-free cotton cloth. Make sure that the lens is still in focus after cleaning and adjust the lens' focus if required.

2.10.2 Wiring, Fire Prevention, Lightning and Surge Protection

When installing the wiring in or out of buildings, make sure you always adhere to the relevant regulations on wiring, fire prevention and protection against lightnings.

MOBOTIX recommends having MOBOTIX cameras installed only by certified specialists accustomed to installing network devices and having proper respect for the applicable regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Find more information on the subject at the **International Electrotechnical Commission** (IEC, **www.iec.ch**) or at a manufacturer of protection devices against lightning and electrical surges, such as Dehn (**www.dehn.de**).

Wiring

When installing the wiring, make sure you follow these guidelines:

- **Data cable:** Make sure you only use double-shielded CAT 5/7 cable **(S/STP)** for Ethernet connections.

- **Outdoors:** Installing the camera outdoors requires special precautions and measures regarding the cables as well as lightning and surge protection (see further below in this section).

- **Wire lengths:** The cable segments must not exceed the maximum allowed cable lengths in order to ensure proper data transfer (see section 3.3, *Connecting the Camera to the Network and to the Power Supply*).

- **Avoid induction:** When running data cables parallel to existing regular power lines or high-voltage wires, make sure you observe the minimum distances to the power cables.

Fire Prevention

When installing the power lines to the camera, make sure you always adhere to the relevant regulations on wiring and fire prevention at the site of the installation.

Lightning and Surge Protection

To prevent damage from lightnings and surges, make sure you follow these guidelines:

- **Lightning conductors:** In areas exposed to lightning (e.g. on roofs), a distance holder (1 m (3 ft) higher, 1 m (3 ft) away from the camera) and proper lightning conductors need to be installed in order to prevent lightning strikes into the camera and to ensure that the energy of a lightning strike is properly led to the ground.
- **Surge protection:** Make sure you have installed proper protection against electrical surges in order to prevent damage to the camera, the building and the network infrastructure. This includes surge protectors for 19" racks, adding an uninterruptible power supply (UPS) to the MOBOTIX camera, and installing surge arresters or similar for routers, switches, servers, etc.

2.11 Camera Accessories

Power supply (MX-SNT-E/U/GB/J/AUS01-30-RJ)

The MOBOTIX power supply is required if you do not use a **Network Power Rack** or **Network Power Box**, or a PoE-compatible switch or router.

Network Power Adapter (MX-NPA-3-RJ)

The Network Power Adapter allows injecting the power supply for the MOBOTIX camera into the network cable. It thus allows using the network cable for connecting to the camera and for remotely supplying power (up to 100 m (300 ft)). The Network Power Adapter is required, if you are using the universal power supply, and power is not supplied using a PoE switch/router or a MOBOTIX Netpower Box/Rack.

Netpower Box for up to 4 Cameras (MX-NPR-4)

The MX-NPR-4 allows supplying power to up to four MOBOTIX cameras via the network cable. The NPR-4 thus replaces four separate power supplies and four Network Power Adapters. The Netpower Box delivery includes a (detachable) clip at the back, which simply clicks onto DIN rails.

Netpower Rack for 8/20 Cameras (MX-NPR-8/20)

The MX-NPR-8/MX-NPR-20 allow supplying power to up to 8/20 MOBOTIX cameras, respectively, via the network cable. These NPRs thus replace 8/20 separate power supplies and the same number of Network Power Adapters; they are easily mounted in 19" racks (2 rack units).

Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails using supplied adapter (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

On-Wall Set

The D22 On-Wall set can reliably protect external cables if the cables cannot be guided from below the housing but have to be led above the wall for technical or legal reasons. In addition, the On-Wall mount provides ample space for extra modules.

The D22 is **not** included in the delivery of the In-Ceiling Set!
(IP65)

In-Ceiling Set

The D22 In-Ceiling Set allows mounting the D22 camera in fake ceilings, for example. This type of installation provides optimum protection for the camera and reduces the visible profile to a minimum since only the dome is visible.

Vandalism Set

The D22 Vandalism Set provides added protection for D22 cameras. The set consists of a robust camera ring made of stainless steel and a reinforced dome made from 3 mm thick polycarbonate. A camera with vandalism set is perfectly suited for applications in demanding environments (such as prisons, social hotspots,train stations, etc.).

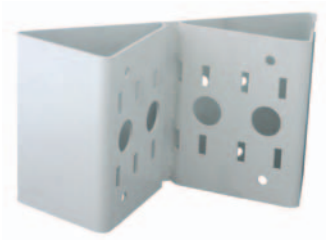
The stainless steel camera ring is available in five versions:

- matt
- polished
- white powder-coated
- black powder-coated
- silver powder-coated

Wall Mount

The D22 Wall Mount is the ideal solution for mounting the D22 to walls for indoor and outdoor applications. The camera is absolutely dustproof and resistant against water jets (IP65). The wall mount also covers RJ45 wall outlets and also has ample space for additional modules.

Corner and Pole Mount



If you would like to mount the MOBOTIX D22 to a pole, you should consider using the MOBOTIX Corner and Pole Mount. The Corner and Pole mount can only be used in conjunction with the Wall Mount. The supplied stainless steel straps allow fixing the mount to poles with diameters between 60 and 180 mm (2.4 to 7.1 in).

By design, the Corner and Pole Mount does *not* allow using a wall outlet for the camera cabling.

Mounted to a corner *

* The appearance and the dimensions of the D22 Corner and Pole Mount may change

Like the Outdoor Wall Mount, the Corner and Pole Mount is made from weatherproof material and is just as robust and maintenance-free.

Mounted to a pole *

Notes:

3 OPERATING THE CAMERA

3.1 General Procedure

The MOBOTIX camera **does not require any software installation**; all you need is your preferred browser with JavaScript support to operate the camera. Thus, the MOBOTIX camera is supported by all common operating systems (such as **Windows**, **Macintosh** and **Linux, ...**).

3.1.1 Establishing the Power Supply to the Camera

You can choose between the following options:

MOBOTIX PoE products do not require any fans and are robust and reliable!

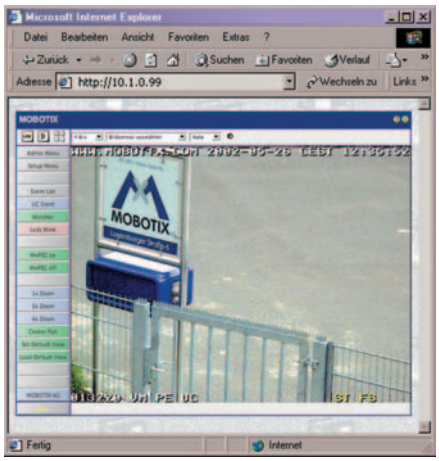
- **External power supply and Network Power Adapter (MX-NPA-3-RJ)**: Power supply of one camera injected into the network cabling (max. length 100 m (110 yd)), from the NPA to the **10BaseT/NET** connector of the camera (see sections 3.3.3 and 3.3.4).
- **Network Power Box/Rack (MX-NPR-4, or 8/20)**: Power supply of 4/8/20 cameras injected into the network cabling (max. length 100 m (110 yd)), from the NPR to the **10BaseT/NET** connector of the camera (see section 3.3.5).
- **Power over Ethernet**: Power supply using network components that are conforming to the PoE standard **IEEE 802.3af** (see section 3.3.6)

PoE components (IEEE 802.af) should not have fans as this would decrease the overall reliability of the entire system

3.1.2 Connecting the Camera

- **Ethernet interface of the camera** (10/100 Mbps Ethernet): Connect directly from a computer (using a crossover cable) or by using a Network Power Adapter or a switch and a regular patch cable. Open a browser and enter the IP address printed on the camera label (e.g. **`10.1.0.99`**).

  If your network does not support a Class A network (i.e. **`10.x.x.x`**), your PC or laptop will have to be set temporarily to such a network address. For operating systems that allow multi-homing (Windows 2000, Windows XP, Linux, Mac OS X), you can set a second IP address in the **`10.x.x.x`** network (see section 3.4.1, *Preparing the Ethernet Connection*).



Computer settings:
- IP address: 10.1.0.11
- Netmask: 255.0.0.0
- Gateway: none
- DNS: none

Once a connection has been established, click on the **Admin Menu** button to start configuring the camera. The **Admin Menu** controls all network settings (IP address, netmask, DHCP, etc.) and other options.

Note

After first booting a new MOBOTIX camera or after resetting to factory defaults, accessing the Administration menu (**Admin Menu** button) will automatically start the **Quick Installation** wizard. This is where you configure the most important camera parameters in a step-by-step manner. If you have completed the Quick Installation wizard at least once, the standard Administration menu will open when you click on the **Admin Menu** button.

Always use **Quick Installation** for initial configuration

The configuration follows these steps:

1) Establish the first connection (via the Ethernet network).
2) Set the parameters for the desired connection type (Quick Installation).
3) Set the event control (see chapter 7, *Events, Actions and Messages* in the *Software Manual*).
4) Set the storage parameters (FTP, internal and external ring buffer storage).
5) Store the configuration in the camera's permanent storage (flash).

Live image: http://preparkcam.mobotixserver.de

3.2 Overview of the Configuration Settings

Once the connection has been established, you can configure the camera by clicking on the **Admin Menu** button or the **Setup Menu** button.

Using the Quick Installation wizard

After first booting the camera or after resetting it to factory defaults, any access to the administration menu (**Admin Menu** button) will start the **Quick Installation**.

The wizard will guide you through the most important settings of the camera (configuration of the network interface, image control, etc.) and can also be used to reset the camera to its factory settings.

Always use Quick Installation for initial configuration!

It is also recommended to use **Admin Menu > Quick Installation** later on as well, e.g. if you would like to change connection parameters or add a new connection type.

Administration and setup of the camera

Admin Menu
User: admin
Password: meinsm

Basic configuration tasks of the camera (e.g. passwords, interfaces, software updates) are carried out from the administration menu (**Admin Menu** button), which requires the corresponding access rights (*admins* group, user name and password).

Setup Menu

Open the **Setup Menu** (button) and find the dialogs for changing the image, event and recording settings in the **Image Control** and **Event Control** sections. These options are also available for users belonging to the *users* group. Some of these settings can be changed using the corresponding pull-down menus above the image on the Live screen.

The image settings are already optimized

Recommendation: Always use factory image settings!

The factory image settings of MOBOTIX cameras deliver excellent images for most application scenarios and should not be changed. If you do wish to make changes, your changes should be minor and gradual.

If you would like to reset changes without resetting the complete configuration to factory defaults, you can use the **Factory** button at the bottom of the dialog to reset only this dialog's settings. If you would like to reset all image settings, you may do so using the **Manage Settings > Restore Image Settings** pull-down menu above the image on the Live screen.

All changes are temporary

All changes to the configuration are only temporary and can thus be tested easily. Restoring the previous configuration settings can be achieved using the **Restore** button in most dialogs or by running **Admin Menu > Restore last stored configuration from flash** (see also section 5.9, *Managing Settings*, in the *Software Manual*).

Make sure to permanently store changed parameters!

Once you have finished configuring the camera, you should always **store the settings in the camera's permanent memory**. You can do so in each dialog (clicking on **Set** at the bottom of each dialog will temporarily set the changes; clicking on **Close** will ask you to store the complete configuration in the cameras permanent memory) or in the **Configuration** section of the administration menu (**Admin Menu > Store current configuration into flash memory**).

The **Configuration** section of the administration menu provides more functions for storing, copying and managing camera settings. For additional information on this topic, see chapter 5, *Basic Camera Configuration*, in the *Software Manual*.

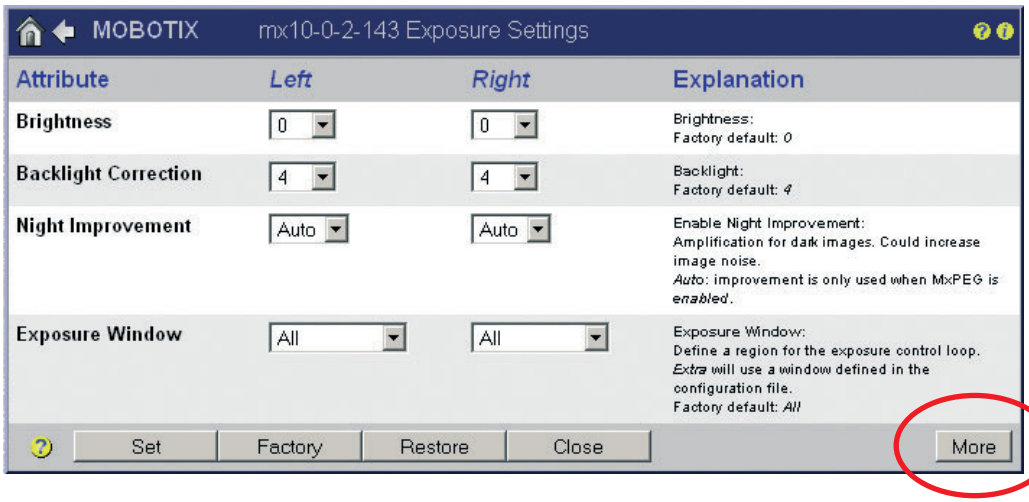
A camera that keeps time

Automatic time synchronization using a time server

Apart from a multitude of possibilities for controlling the camera using time (time tables, holiday and vacation, scheduled tasks, etc.), the camera can also **synchronize its internal clock**. This allows you to keep the camera in synch manually with a computer or fully automatic using a time server or another MOBOTIX camera. The camera can use NTP time servers or time servers providing Time Protocol (RFC 868). For additional information on this topic, see section 5.4.2, *Date and Time / Time Zones and Time Servers*, in the *Software Manual*.

MOBOTIX cameras can do "More"

In order to improve the readability of the camera dialogs, some of them hide less-often used options when showing the dialog. These dialogs have a **More** button in the bottom right corner; click on it to display the advanced options. If all options are displayed, the **Less** button appears. Clicking this button will hide the advanced options.



Click on the More/Less buttons to show/hide the advanced options

3.3 Connecting the Camera to the Network and to the Power Supply

3.3.1 Notes on Cable Lengths and Power Supply

- The **power supply of the camera** can only be established using the 10BaseT/NET connector of the camera with the (pre-installed) network cable. In order to supply power via the network cabling we recommend the MOBOTIX PoE products (MxPoE, see also section 2.11, *Camera Accessories*):
  - for one camera using the **Network Power Adapter** (MX-NPA-3-RJ)
  - for up to four cameras using the **Network Power Box** (MX-NPR-4)
  - for up to 8 or 20 cameras using the **Network Power Rack** (MX-NPR-8/20)
- The **maximum length of the network cable** for remotely supplying power is **100 m (300 ft)**.
- Make sure that you only use switches or routers that support the **10/100 Mbps Ethernet interface** of the camera. Check the LED activity of the corresponding port at the switch or router. When operating many cameras, please also see section 4.11, *Operating Many Cameras*, in the *Software Manual*, for additional hints.
- It is highly recommended to use **uninterruptible power supplies (UPS)**, which also protect the cameras and the network components against electrical surges.

MOBOTIX PoE products have zero maintenance and are reliable as the systems do not require fans

- **Advantages of MOBOTIX PoE Products:**
  - Zero maintenance and reliable without fans.
  - Higher reliability of the system as a whole, since standard routers/switches without PoE can be used (lower risk of failure).
  - Easy installation in 19" racks (*MX-NPR-8/20*) or on DIN rails (*MX-NPR-4*).

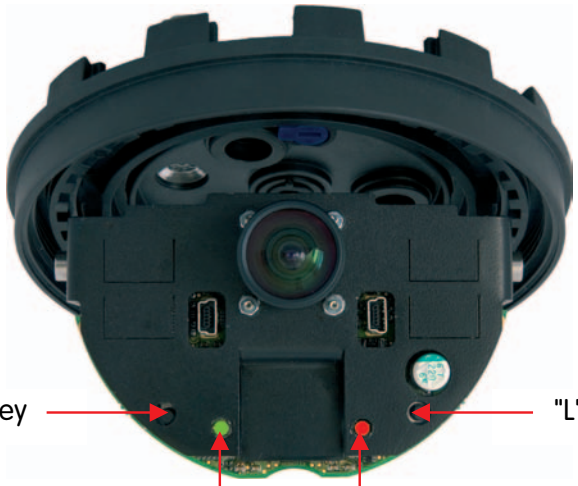
PoE components without fans increase overall reliability of the entire system

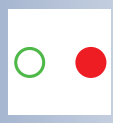
- If you are using **IEEE 802.3af Power over Ethernet network components** for supplying power to MOBOTIX cameras, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, the reliability of the entire system is increased and the life cycle of these components is expanded.

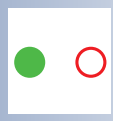
3.3.2 Camera Startup Sequence

As soon as the power supply is established, the camera's LEDs will provide information on the startup sequence of the camera.

- **Booting**: Immediately after connecting the power supply, the red LED lights up, blinks for two seconds, then stays on permanently. The camera's boot loader checks the hardware, unpacks and starts the operating system. All applications are verified using the checksums; **in case of an error**, the camera will start using the backup operating system.
- **Waiting for key pressed**: Both LEDs light up for four seconds. If you press the **"R"** or **"L"** key of the camera during this time, the camera will execute the corresponding function (see sections 3.5 and 3.6).
- **Ready**: Once the application software has been started, the green LED is on permanently and the red LED blinks. You can now reach the camera via the network using a browser. For additional information on this topic, see section 5.4.3, *LED Signals and LED Configuration*, in the *Software Manual*.







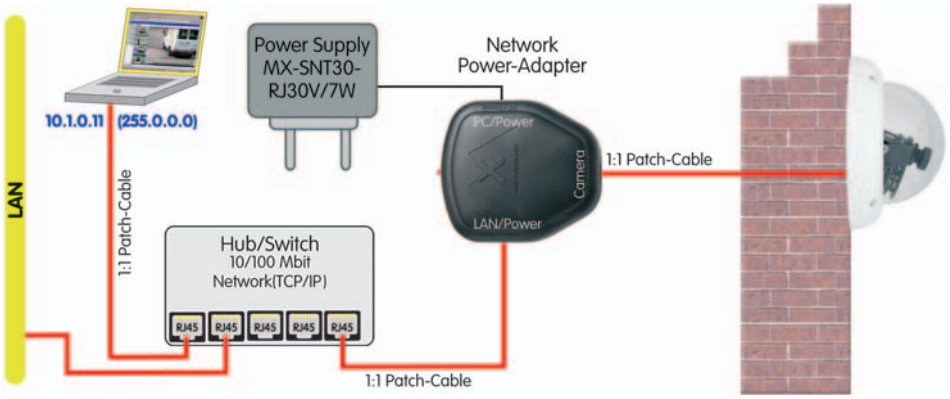
Note

During the startup sequence of the camera, the LEDs will always light up, even if they have been deactivated in **Admin Menu > LED Setup**.

MOBOTIX power supply and Network Power Adapter required

3.3.3 Power Supply (MxPoE) Using a Switch

- Connect the factory pre-installed cable of the camera to the **Camera** connector of the Network Power Adapter.
- Connect the **LAN/Power** connector of the Network Power Adapter to an Ethernet connector of the switch/router or the Ethernet wall outlet.
- Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the Network Power Adapter.



MOBOTIX power supply and Network Power Adapter required

3.3.4 Power Supply (MxPoE) When Connected Directly to a Computer

- Connect the factory pre-installed cable of the camera to the **Camera** connector of the Network Power Adapter.
- Connect the **PC/Power** connector of the Network Power Adapter to the Ethernet port of the computer.
- Plug the RJ45 connector of the external power unit into the **LAN/Power** connector of the Network Power Adapter.

The Network Power Adapter replaces the crossover cable when directly connecting to a computer

3.3.5 Power Supply (MxPoE) Using a Network Power Rack or Network Power Box

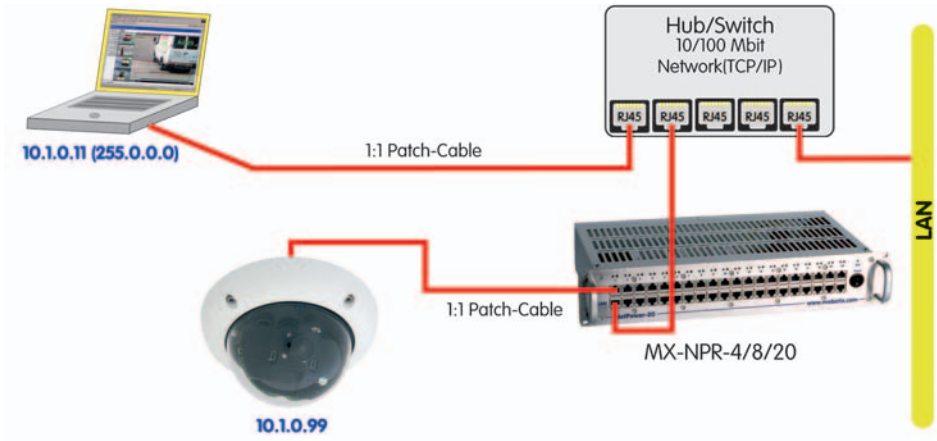
MOBOTIX Network Power Rack or Network Power Box required

- Connect the factory pre-installed cable of the camera to the **CAM** connector of the **Network Power Rack (MX-NPR-8/20)** or the **Network Power Box (MX-NPR-4)**.
- Connect the **LAN** connector of the Network Power Rack or Network Power Box to an Ethernet connector of the switch/router.

Use the 19" MOBOTIX Netpower rack-mount units to supply power to 8 or 20 cameras

Use the MOBOTIX Network Power Box for smaller installations

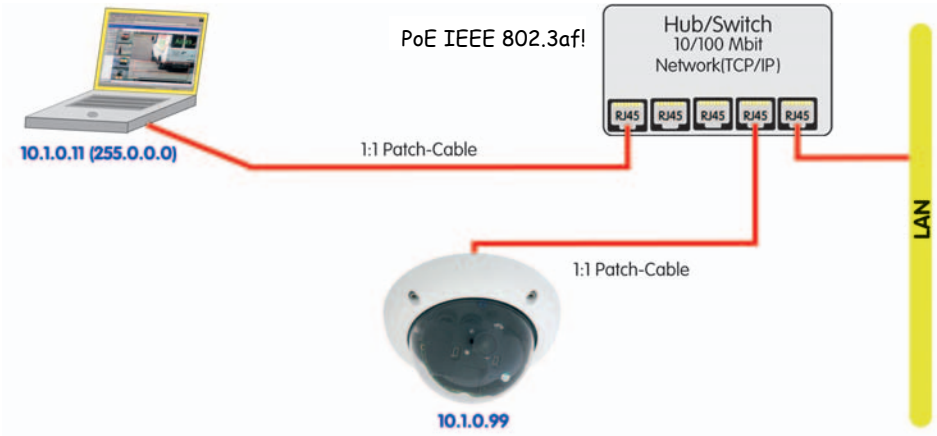
Uninterruptible power supply (UPS) should be installed



3.3.6 Power Supply (PoE IEEE 802.3af) Using Power-over-Ethernet Products

PoE switch/router according to IEEE 802.3af required

- Connect the factory pre-installed cable of the camera to the Ethernet connector of the PoE switch/router. The switch/router needs to support the **PoE standard IEEE 802.3af**.



3.4 The First Image from the Camera

Once the Ethernet connection has been established, you have the following possibilities to see the first image of the camera:

- **Automatic camera search and configuration** using **MxControlCenter** (free Windows client for MOBOTIX cameras; section 3.4.6, *The First Image in MxControlCenter*)
- **Manual configuration** (section 3.4.1, *Preparing the Ethernet Connection*)

Working with the web-based user interface only requires a web browser with activated JavaScript!

Besides using **MxControlCenter**, you can also use a **browser** to access the camera (section 3.4.2, *The First Image in the Browser*).

In order to finish the camera configuration, you can use either **MxControlCenter** or the browser-based user interface of the camera (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).

3.4.1 Preparing the Ethernet Connection

Caution:
Netmask 255.0.0.0

For this example, we will use a camera with the factory IP address **10.1.0.99**. **Replace this IP address with the IP address of your camera**. You will find this address on a **small sticker on the camera**. Accessing the camera is always the same and is independent of the connection type: simply enter the camera's IP address in the address field of the browser (see section 3.4.2, *The First Image in the Browser*).

Note

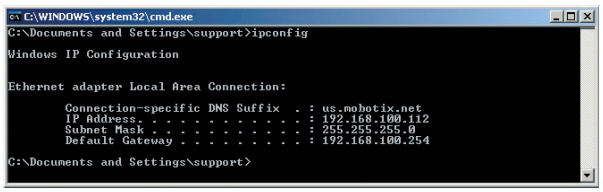
Pressing the **"R" key** on the front of the camera will let the camera **announce its current IP address**, if an external speaker has been attached.

Open a Command Prompt (Windows):
Start > Run, enter "cmd", then press [Return]

Your computer has to have a network or a wireless interface, and it should be in the same subnet as the camera. If your network also uses IP addresses of a class A network (e.g. **10.x.x.x**, network mask **255.0.0.0**), you should be able to access the camera directly (provided no other network device uses the same IP address).

Determine the IP address of your computer:

- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:
  Windows 2000/XP: **ipconfig**
  Linux/UNIX/OS X: **ifconfig**


C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\support>ipconfig
Windows IP Configuration
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . : us.mobotix.net
IP Address. . . . . : 192.168.100.112
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.100.254
C:\Documents and Settings\support>

You will find the IP address of your Windows computer under **IP address**; for Linux/UNIX/OS X computers, search for the **inet address** parameter of the **eth0** device (the first network interface). If your computer does not use an IP address in the **10.x.x.x** range, you should change the network configuration of your computer or add a new IP address (see below).

Make sure that no other network device uses the camera's IP address:

- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:
  `ping <factory IP address>`

The factory IP address is printed on the sticker on the camera housing

Example: 10.1.0.99

If you receive an answer from another network device although the camera is not connected, you will have to remove that device until you have reset the MOBOTIX camera to a free IP address. We recommend using the Quick Installation wizard for assigning a new IP address to the camera.

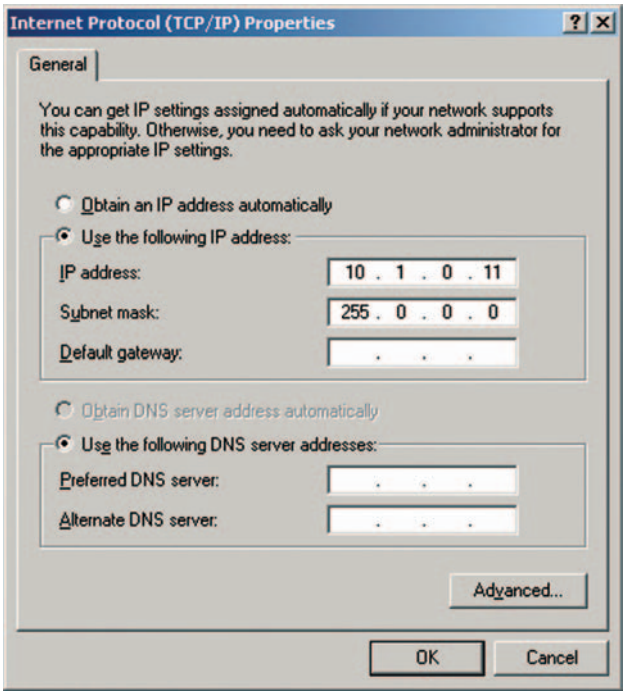
Make sure that you use the IP address of your camera instead of 10.1.0.99!

If your computer does not use an IP address in the 10.0.0.0 network (e.g. a 192.168.x.x or 172.x.x.x network), you should temporarily set a new IP address in the 10.x.x.x range:

Windows 2000/XP

Setting up a second IP address on Windows computers

(1) Open the **Network Connections** and open the **Properties of LAN Connection**.
(2) Double-click **Internet Protocol (TCP/IP)**.
(3) On the **General** tab, activate the **Use the following address** option.
(4) Enter an IP address (e.g. **`10.1.0.11`**) in the class A network (**`10.x.x.x`**) that is unique in your network and that is not the same as the camera's IP address.
(5) Close all dialogs by clicking on **OK**.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
10 . 1 . 0 . 11
Subnet mask:
255 . 0 . 0 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Linux/UNIX/OS X

Setting up a second IP address on Linux/UNIX computers

(1) Open a terminal as **`root`** user and enter the following command (**`eth0`** or **`en0`** is usually the first network interface):
Linux/UNIX: **`ifconfig eth0:1 10.1.0.11`**
OS X: **`ifconfig en0:1 10.1.0.11`**

The computer now has the additional IP address **`10.1.0.11`**, allowing it to access the camera with its factory IP address in the `10.x.x.x` network (**`10.1.0.99`** in this example).

3.4.2 The First Image in the Browser

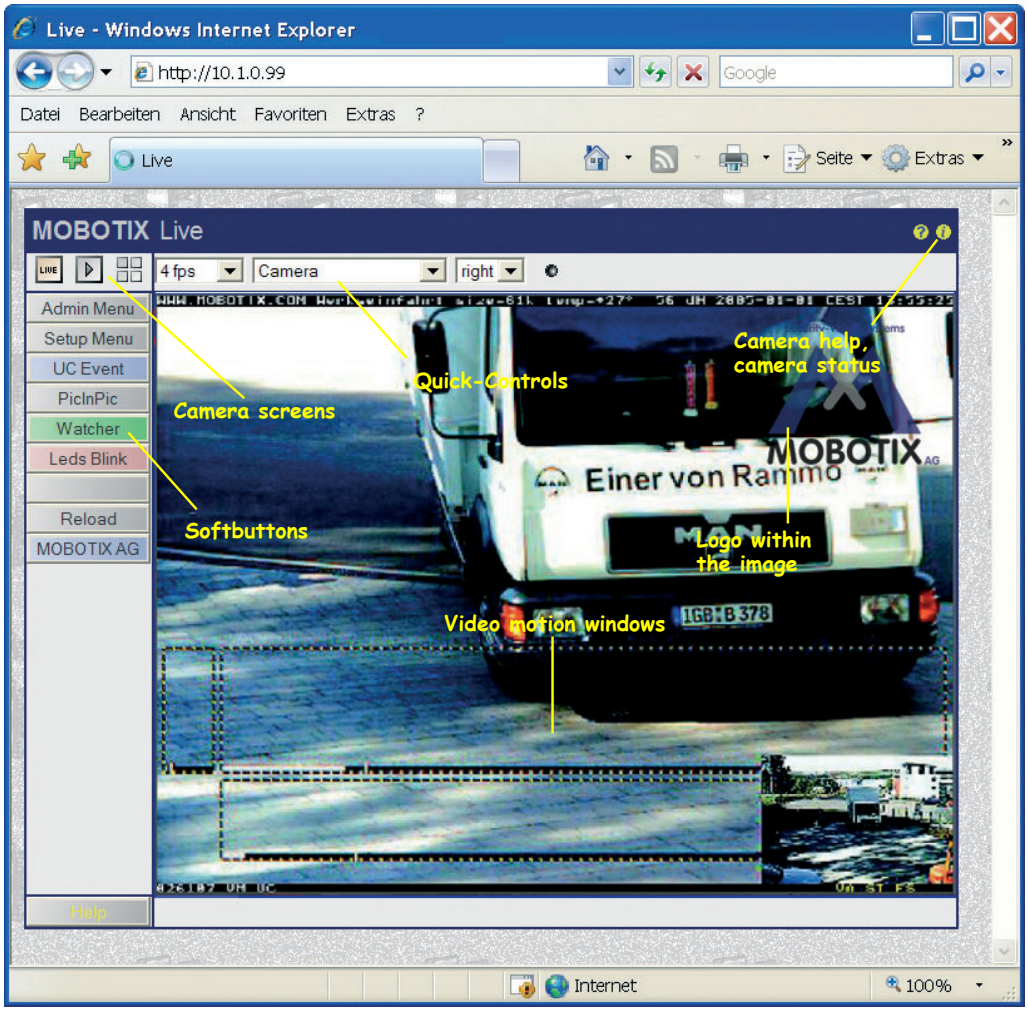
Camera access: http://10.1.0.99 (example IP)

The factory IP address is printed on the sticker on the camera housing

Now that you have successfully started the camera for the first time, you can access the camera using your preferred browser to see the live video stream and the user interface. Internet Explorer, Mozilla, Firefox, Safari, Camino or any other graphical browser with activated JavaScript is suitable. The operating system is of no importance, even PDAs can be used without any problems, provided a web browser is available on the device.

Administration menu:
User Name: **admin**
Password: **meinsm**

User interface can be **customized**



After entering the camera's IP address in the browser address bar (e.g. **http://10.1.0.99**), you will see the Live screen of the MOBOTIX camera with its user interface controls, such as **softbuttons**, buttons for the different **camera screens**, **pull-down menus** (*Quick Controls*), icons for accessing the **online help** and the **camera status**, as well as status information elements above and below the live image.

If you have started the camera using DHCP or you have set the IP address manually, enter the new IP address in the browser address bar (e.g. **192.168.0.99**) instead of the factory IP address.

Changing the factory IP address: Always use Admin Menu > Quick Installation

Note

The MOBOTIX camera can announce its current IP address over the **speaker**. For additional information on this topic, see section 3.6, *Starting the Camera With an Automatic IP Address (DHCP)*.

MxControlCenter: In order to see the live image of the camera, you can also use other applications or the integrated programming interface of the MOBOTIX camera. **MxControlCenter** for Windows is such an application and is provided **free of charge** by MOBOTIX (see section 3.4.6, *The First Image in MxControlCenter*). Besides its ability to display fast live video of up to **30 cameras simultaneously at 30 fps each** on one PC, MxControlCenter also allows recording and playing back video clips with lip-synchronous audio via the network and can control pan/tilt heads using a joystick or the mouse. Download the newest version of MxControlCenter from the MOBOTIX website. The website contains more information on MOBOTIX systems as well as the MxControlCenter User Manual.

From camera software version 3.0.3.37, MOBOTIX cameras automatically offer their **web service within the network** (see section 3.4.5, *Access Using Zeroconf/Bonjour*). This means that the cameras will announce themselves automatically in a Bonjour list in the web browser and in MxControlCenter. Selecting one of the listed MOBOTIX cameras will automatically display the camera's user interface in the browser window or in MxControlCenter.

Not available on Basic models, on D22 IT/Secure models only with external speaker!

3.4.3 Additional Information

For more information on this topic, see the **News** and **Functional Overview** pages in the online help of the camera's browser interface. Click on the yellow ? icon in the top right corner to open the camera's online help.

Camera Help

In order to obtain more information on the camera and its current configuration, open the **Camera Status** dialog by clicking on the yellow i icon in the top right corner of the camera's browser interface.

Camera status

Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from **www.mobotix.com**. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

3.4.4 Camera Screens in the Browser

Per factory default, the MOBOTIX camera first shows the **Live** screen. You can set a different start page in order to prevent others from changing the settings. In addition to this, you can assign user names and passwords to prevent unauthorized access or you can restrict access to the current live image only by setting the **Guest** screen as the start page.

Use the Administration menu to set the camera screen that should appear initially when accessing the camera IP address

The following screens are available:

- **Guest** screen: Only shows the current live image with reduced frame rate (see section 4.7, *Guest Screen*, in the *Software Manual*).
- **Live** screen: Shows the current live image and allows changing the image and event settings of the camera (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).
- **Playback** screen: Shows all recorded images or video clips with extended functions for searching and downloading images, regardless of where the images are stored (in the internal or the external ring buffer on a file server or PC; see section 4.4, *The Playback Screen in the Browser*, in the *Software Manual*).
- **MultiView** screen: Shows multiple cameras or the last events in a freely definable layout (see section 4.5, *The MultiView Screen in the Browser*, in the *Software Manual*).
- **PDA** screen and **PDA Event List**: Both screens are optimized for PDAs with a focus on fast data transmission with low bandwidth requirements (GSM, GPRS) on devices with small displays (PDAs, mobile phones, sub notebooks). The **PDA Event List** in particular gives a quick overview over the last events since the live image is not transferred (see section 4.6, *The PDA Screen*, in the *Software Manual*).

http://10.1.0.99/pda opens the PDA screen

Note
Open **Admin Menu > Language and Entry Page** to set a different start page when accessing the camera. Open **Admin Menu > Users and Passwords** and **Admin Menu > Group Access Control Lists** to set user rights and to prevent unauthorized access to specific screens and functions of the camera (see section 5.4.1, *Passwords*, in the *Software Manual*).

Live/Playback/MultiView: Click on ? to open the online help pages for the camera screens

For more information on camera screens, see the **online help** of the camera's browser interface. Click on the yellow ? icon in the top right corner of the **Live screen** to open the corresponding page of the online help.

Notes:

3.4.5 Access Using Zeroconf/Bonjour

Automatic network configuration for MOBOTIX cameras using Zeroconf/Bonjour

Zeroconf (short for *Zero Configuration Networking*) describes the networking method of automatically establishing an IP-based network without the help of servers and without changing any settings. Zeroconf-capable devices automatically announce their name and the service they are providing (printer, email server, etc.) in the network. As a basic technology, Zeroconf is part of the current Windows, Linux and Mac OS X operating systems.

Bonjour is the implementation of this service in Apple Mac OS X from version 10.4; in Mac OS X 10.2 and 10.3, this service is called **Rendezvous**.

Apple Bonjour

Bonjour is available free of charge for **Windows** computers from the Apple web site **`www.apple.com/bonjour`**.

For **Linux** and **Unix**, **Avahi** provides the corresponding functionality.

For further information on Bonjour and Zeroconf, please consult **`www.apple.com/macosx/features/bonjour`** and the Zeroconf web site **`www.zeroconf.org`**.

MOBOTIX cameras support Bonjour by default from software version 3.0.3.37!

From software version **3.0.3.37**, MOBOTIX cameras automatically offer their web service via Zeroconf/Bonjour. This means that the cameras will announce themselves automatically in a Bonjour list in the web browser and in MxControlCenter. Selecting a MOBOTIX camera in the browser will display the camera's user interface in the browser window; likewise, MxControlCenter will be able to find the camera.

Note

A major **advantage of Zeroconf/Bonjour** is that **you do not need to know the IP address or the name of the MOBOTIX camera in order to access it**.

Another advantage of Bonjour is that **all cameras will be found regardless if they are in the same subnet or in other subnets as long as they are in the same physical network as the computer**. If the cameras are not in the same subnet, actually connecting to them is not as easy. The name of the camera is listed in the web browser, but connecting via HTTP will not work, however. **Using MxControlCenter allows reconfiguring the camera automatically for the subnet of the computer. You can now easily reach the camera in a web browser and MxControlCenter**.

Caution

When using the camera in a network with managed switches or internal filewalls, make sure that port **`5353 (UDP)`** is not blocked or else Zeroconf/Bonjour will not work.

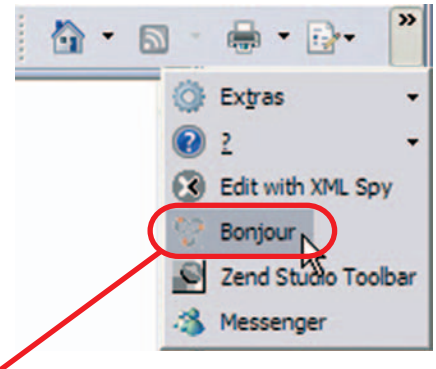
Prerequisites for using Zeroconf/Bonjour

MOBOTIX camera:

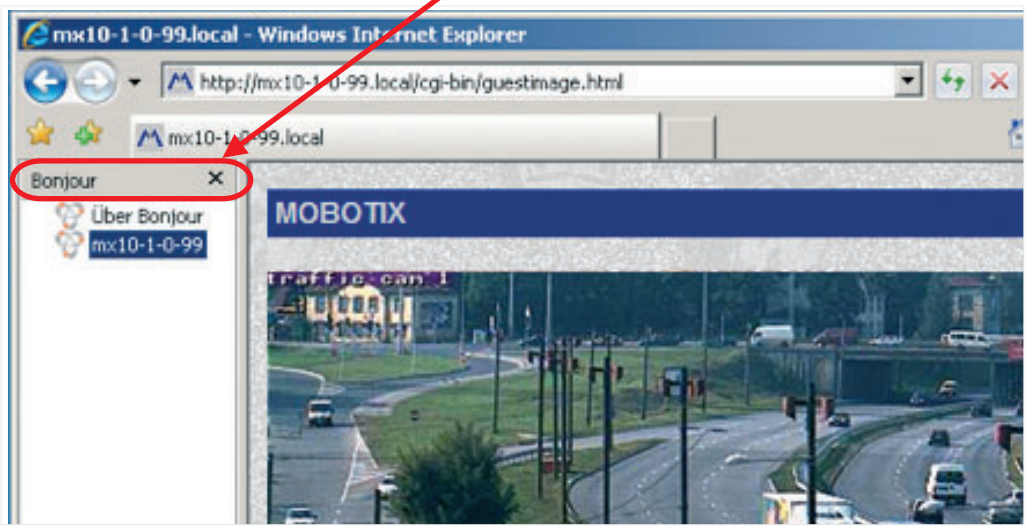
- **Zeroconf** has to be activated (**Admin Menu > Ethernet Interface**). This is the **factory default** for MOBOTIX cameras from software version 3.0.3.37.
- The camera needs to be in the same **physical** subnet as the computer (**Admin Menu > Ethernet Interface**).

Operating system:

- **Microsoft Windows (2000, XP, 2003, Vista)**: Bonjour for Windows has to be installed (`www.apple.com/bonjour`). The application also configures the Windows firewall, installs an add-on for Internet Explorer and the Java Bonjour libraries. The list of Bonjour-enabled network devices is shown in Internet Explorer once the **Bonjour** add-on has been activated in the main toolbar of Internet Explorer.



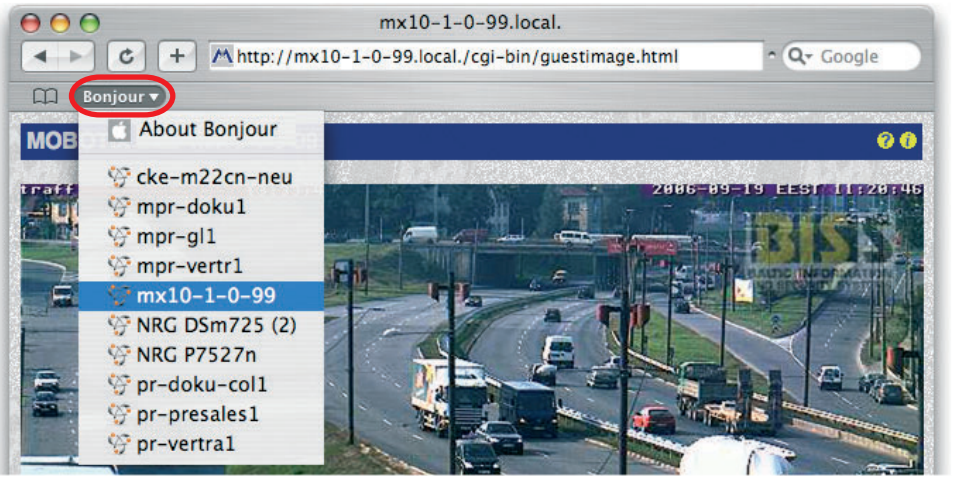
Internet Explorer (Windows): Activate Bonjour add-On



Internet Explorer with activated Bonjour sidebar

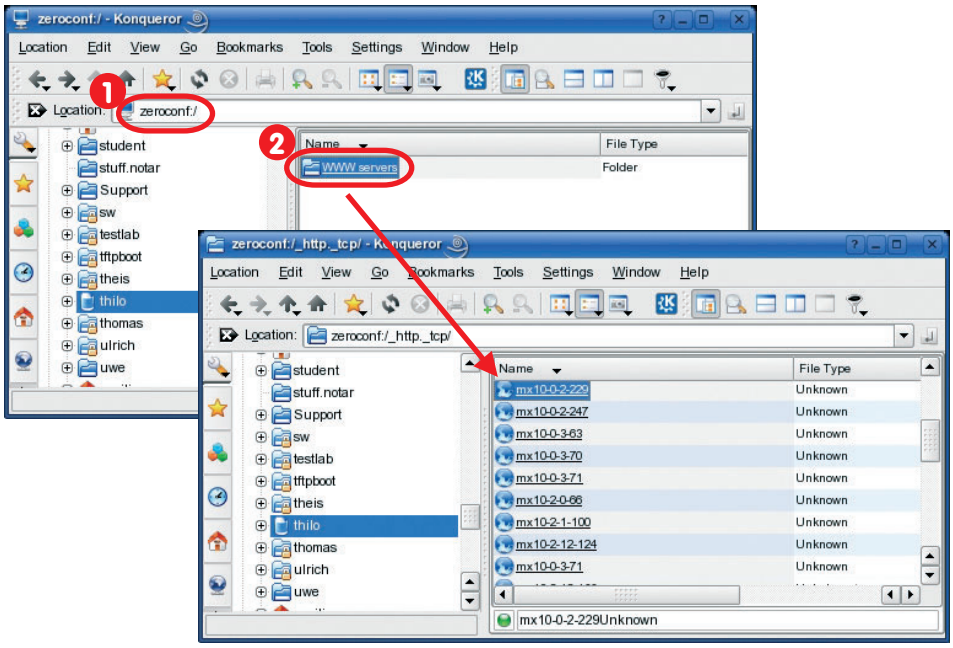
- **Macintosh OS X (10.2 or higher)**: Bonjour is included in the Apple operating system. There is no other configuration required. The list of Bonjour-enabled network devices is displayed in Safari after clicking on the **Bonjour** button.

Bonjour is enabled by default in Safari (Mac OS X)



- **Linux**: Zeroconf is included in KDE from version 3.4 and in Gnome from version 2.8. The list of Bonjour-enabled network devices is displayed after entering **`zeroconf:/`** in the Konqueror address bar. The displayed list contains all Zeroconf-enabled network services (see figure below). Clicking on **`/WWW servers`** displays the list of all available MOBOTIX cameras (and all other Bonjour-enabled devices). Linux users can also use the **`mdns-scan`** application in a terminal to search for Bonjour-enabled devices on the network.

Konqueror on SuSE



Note

If a **proxy server** is used in your network, you may get an error message when trying to access a MOBOTIX camera in the web browser. Make sure that the list of proxy exceptions in your browser contains the following entry:

`*.local` (Windows)
`*.local.` (Mac OS X)
`.local.` (Linux)

To find the **proxy exceptions** in **Internet Explorer** for **Windows**, open **Tools > Connections > LAN Settings > Settings > Proxy server > Advanced** and add the entry in the **Exceptions** text field.

To find the **proxy exceptions** in **Mac OS X**, open **System Prefencenes > Network > Proxies** and add the entry in the **Bypass proxy settings for these Hosts and Domains** text field.

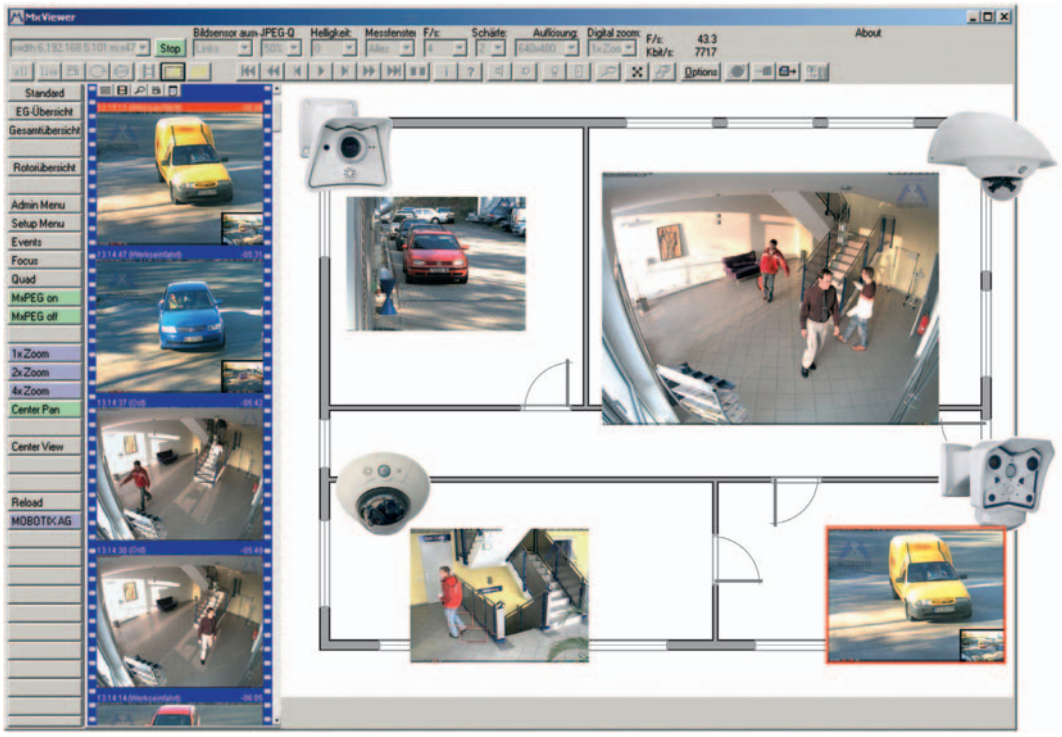
As an alternative, your network administrator can reconfigure the proxy server so that it does not block `.local` addresses.

Caution: **Proxy servers** may cause errors when trying to establish a connection

3.4.6 The First Image in MxControlCenter

Download MxControlCenter free of charge from www.mobotix.com

MOBOTIX MxControlCenter is a free Windows application that allows displaying **multiple MOBOTIX cameras** on one computer and provides alarm management functions. It can easily handle displaying **30 cameras with CIF resolution simultaneously** at **30 fps each** in **MxPEG** format on one standard PC with Intel Pentium 4 and 3 GHz.



MxControlCenter Windows client with alarm list, background image and freely positioned cameras

MxControlCenter can do quite a bit more than simply display the video and audio data from MOBOTIX cameras. The unique features of MxControlCenter in combination with the MOBOTIX cameras create a full-featured security system: intelligent alarm handling, various ways of arranging the camera views on different layouts (MultiView screens), ability to display cameras that are sending alarm notifications, the integrated camera management functions, and an array of other interesting features.

Further Information on MxControlCenter

For further information on **MxControlCenter**, download the *MxControlCenter User Manual* from **`www.mobotix.com`**:

- Saving and loading MxPEG video clips
- Creating and editing layouts using the Layout Editor

Further Information in the Software Manual

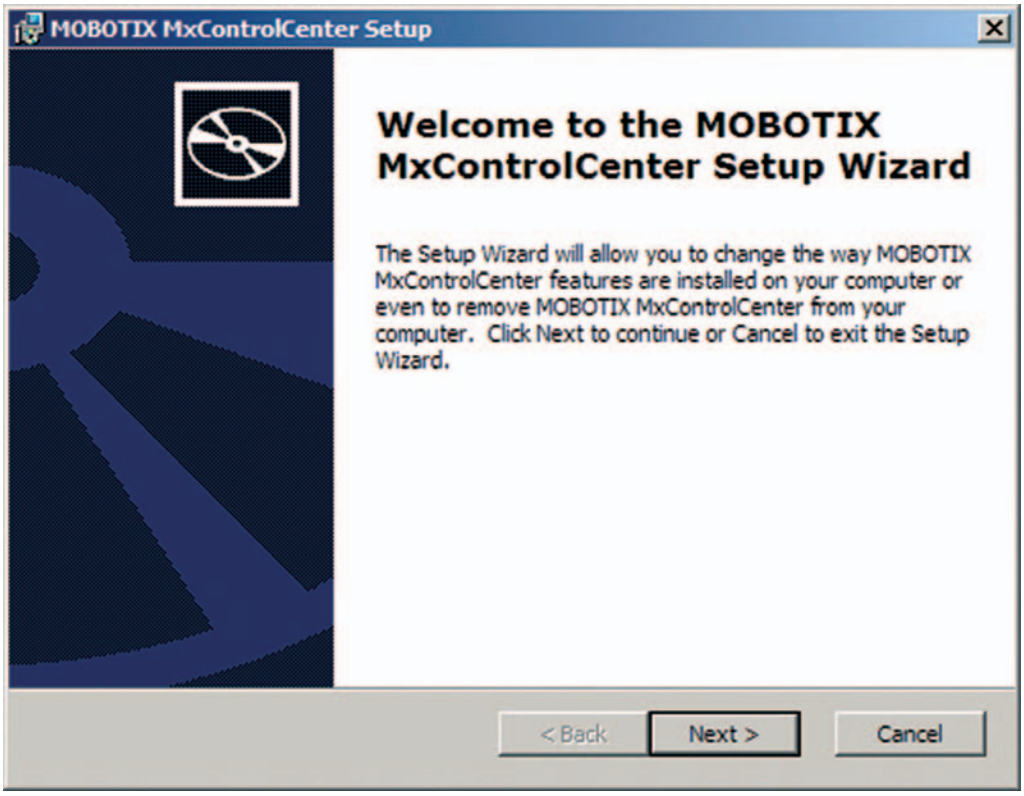
- Section 4.3.5: *JPEG, MxPEG and Audio*
- Section 4.3.6: *Background Information on JPEG, MxPEG and Audio*
- Section 4.10: *Fast Video Streaming*

Installing MxControlCenter

If you have an **MxControlCenter installation CD**, insert it into your computer drive.

If this is not the case or if you would like to update an older version, you can download the latest Windows installer (**`MSI`** file) from the MOBOTIX website and then manually install the current version. The latest version is available at **www.mobotix.com > Support > Software-Downloads** in the **MxControlCenter** section.

If you are using the installation CD, the installation process starts automatically and leads you through the necessary steps. If you have downloaded the Installer, simply double-click the **`MSI`** file to begin the installation process.


MOBOTIX MxControlCenter Setup
Welcome to the MOBOTIX MxControlCenter Setup Wizard
The Setup Wizard will allow you to change the way MOBOTIX MxControlCenter features are installed on your computer or even to remove MOBOTIX MxControlCenter from your computer. Click Next to continue or Cancel to exit the Setup Wizard.
< Back
Next >
Cancel

Automatic installation of MxControlCenter with Windows Installer (MSI)

The installer automatically creates the shortcuts selected in the installation process (desktop, start menu, etc.).

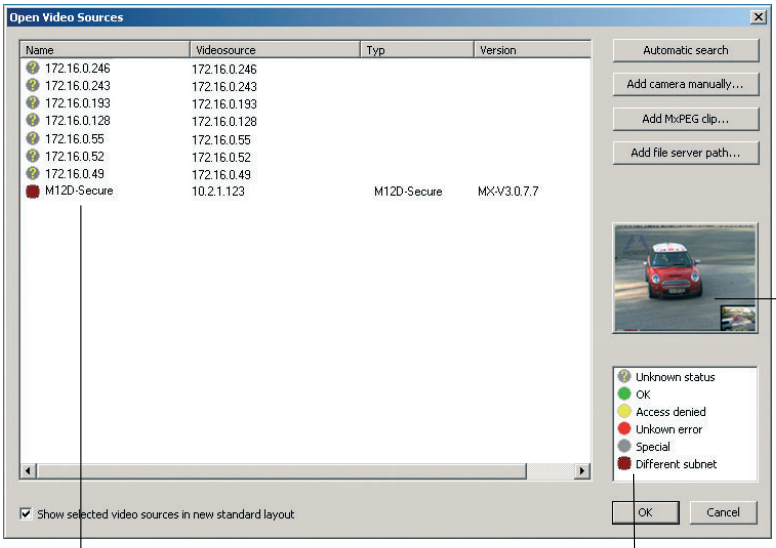
Using MxControlCenter for the First Time

Double-click the shortcut created by the installer (see *Installing MxControlCenter*) or the program file itself to start MxControlCenter.

Automated Search for MOBOTIX Cameras

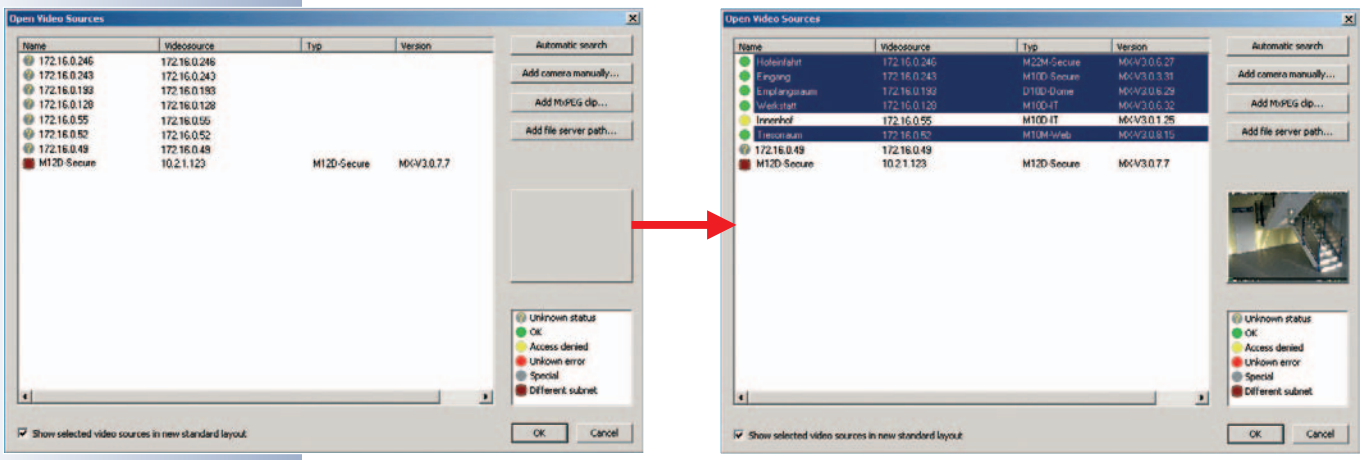
If you start MxControlCenter for the first time or if you have not yet stored a start layout with the desired video sources (i.e. MOBOTIX cameras), the **Open Video Sources** dialog will open and automatically starts scanning the network.

Automatic search for MOBOTIX cameras!



After all MOBOTIX cameras have been identified, MxControlCenter performs an operational test on the cameras to determine their status and then lists them according to the legend.

Next, MxControlCenter automatically selects all cameras.



Click on **OK** to add the selected cameras to the **Open Video Sources** dialog.

Anytime you connect a new camera to the local network, you can initiate the search in the **Open Video Sources** dialog again by pushing the Automatic search button.

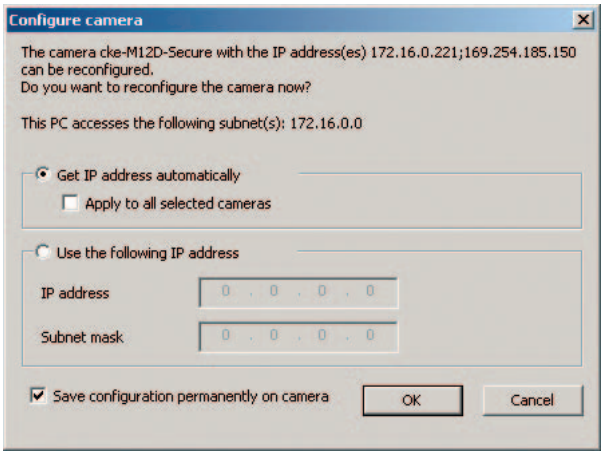
If the desired MOBOTIX cameras are highlighted in the video source list, proceed to *Selecting Video Sources*.

Configuring MOBOTIX Cameras for a Different Network

Automatic camera configuration by MxControlCenter

Using Bonjour, MxControlCenter finds not only cameras on the same subnet (network range) but also **MOBOTIX cameras located in other subnets** (status: *Different subnet*). Normally, you would not be able to establish any connection to cameras in a different network or subnet (without going into much further detail about the complicated details of TCP/IP network configurations). This is possible, for example, when a camera with a factory IP address is connected to a network in which a DHCP server automatically assigns the IP addresses.

Click on *Configure network* in the context menu and **MxControlCenter will automatically reconfigure this camera** so that it is "integrated" into your existing subnet. However, MxControlCenter first needs some information about the subnet into which the camera will be integrated. You can enter this information in the **Configure Cameras** dialog that opens automatically.


Configure camera
The camera cke-M12D-Secure with the IP address(es) 172.16.0.221;169.254.185.150 can be reconfigured.
Do you want to reconfigure the camera now?
This PC accesses the following subnet(s): 172.16.0.0
Get IP address automatically
Apply to all selected cameras
Use the following IP address
IP address
Subnet mask
Save configuration permanently on camera
OK
Cancel

If your computer gets its IP address automatically from a DHCP server, then this is certainly the best choice for the new camera and most likely for all other cameras which have been found in a different subnet (**Apply to all inaccessible cameras** checkbox).

If you have assigned a fixed IP address to your computer, you will certainly prefer to assign fixed IP addresses (issued by your system administrator) to every camera. In most cases, you should enter a similar configuration as the one found for your computer's **Network Connections** in the **Properties of Internet protocol (TCP/IP)** dialog.

MxControlCenter changes the network configuration of the current camera and, after a short time, the camera also appears in the list with a new IP address and in the same subnet as your computer.

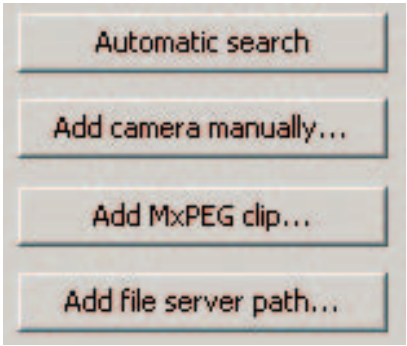
Make sure that the **Save camera configuration permanently** checkbox is activated so that the new network settings will be used from now on and not just until the camera's next reboot.

Note

If you have set a different user name and password for administration than the factory-preset ones (**admin**, **meinsm**), you will need to have these user credentials available and enter them in the appropriate dialog. To open the dialog, click on the *Enter password* context menu entry.

Defining Additional Video Sources

Besides automatically detecting MOBOTIX cameras, you can also **manually add other video sources** to the list of available video sources in MxControlCenter.

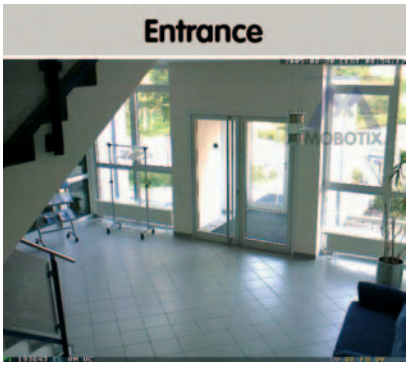


- **Automatic search**: Scans the (physical) network. This scan will find all MOBOTIX cameras, regardless of whether they are in the same subnet as the computer or in a different one.
- **Add camera manually**: Enter a known IP address or the DNS name of a MOBOTIX camera if this camera had not been detected during the automatic search in the first place.
- **Add MxPEG clip**: Adds an MxPEG video clip previously recorded by a MOBOTIX camera as a video source.
- **Add file server path**: Adds the alarm images previously stored by a MOBOTIX camera on an external file server as a video source.

Selecting Video Sources

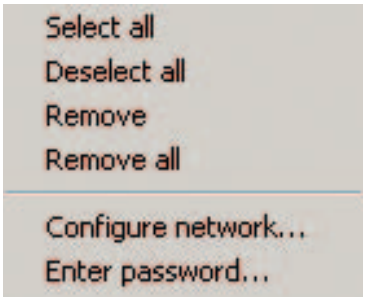
Highlight the desired video sources you would like to manage and display in MxControlCenter.

Camera preview



If you select a camera with a status of *OK*, MxControlCenter **automatically displays the live images from the camera in the preview window**. If you are using [Ctrl]-click to select several cameras, the image from the camera selected last is shown in the preview window. This feature facilitates identifying the cameras you would like to use.

Editing the video source list

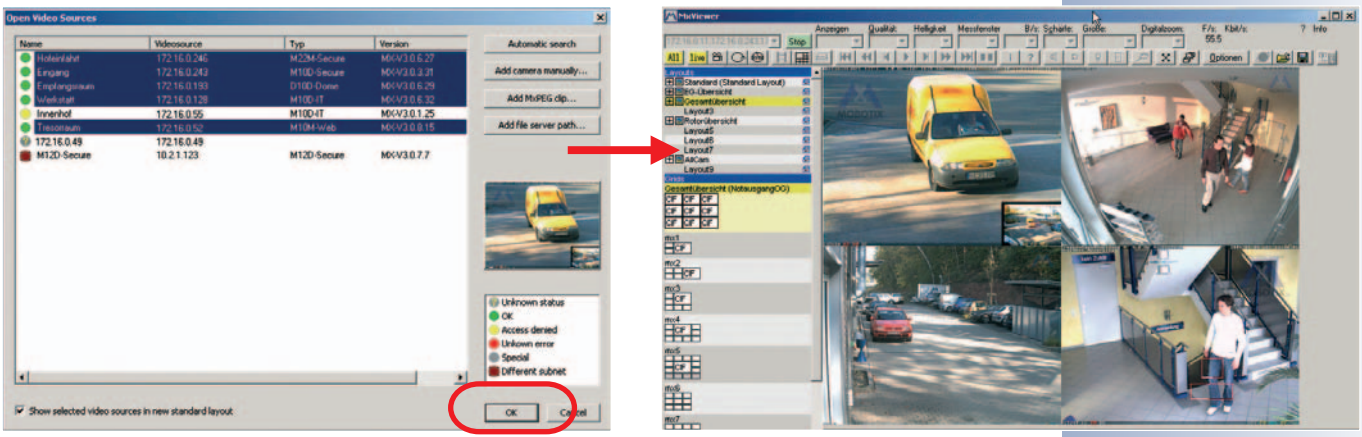


This list provides a popup menu (right mouse key), allowing you to select/deselect all video sources at once. Similarly, you can highlight some or all of the listed video sources and remove them from the list if they are not to be displayed or managed in MxControlCenter.

If you interrupt the discovery process (section *Configuring MOBOTIX Cameras for a Different Subnet*) or require a password that is different from the factory preset one, you can always relaunch the configuration process from the popup menu at a later time and enter the appropriate user name and password.

Using the selected video sources

Clicking on **OK** instructs MxControlCenter to use the highlighted cameras. Activate the **Show selected video sources in new standard layout** checkbox and MxControlCenter automatically generates a layout with the live images of all highlighted cameras.



3.5 Starting the Camera With an Automatic IP Address (DHCP)

If your network has a DHCP server, you can start the camera with DHCP support. In this case, the DHCP server automatically assigns an IP address.

As soon as startup has been completed, the camera automatically announces its IP address, its network mask and its MAC address (note that this feature requires an external speaker). Note that this announcement function can be deactivated (**Admin Menu > Loudspeaker and Microphone**).

Connect and activate the external speaker of the camera!

Proceed as follows to start the camera using DHCP:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the **"R" key** on the camera **within four seconds**.

The D22 also allows connecting an external speaker and microphone. The D22 does not have a built-in speaker or microphone.

Press **"R" key**

- After about two more seconds, the camera plays a sound twice ("Boing, Boing"), if an external speaker has been connected.
- After about another 15 seconds, the camera will announce its network data, provided it has audio functionality.

You can now access the camera using the IP address it just announced and via the list of Bonjour-enabled devices.

Announce IP address: Press **"R" key**

Note

If you would like to have a running camera repeat its network settings, simply press the **"R" key** once. For D22 models, make sure that an external speaker has been connected to hear the announcement.

Caution

In case of an error, the camera uses its last IP address

When starting the camera with DHCP support, make sure that the network has a **properly functioning DHCP server**. If this is not the case, the camera cannot obtain a valid IP address and will fall back to its last known IP address.

You should also make sure that the DHCP server **always assigns the same IP addresses to the cameras** by reserving the desired IP address for the MAC address of every camera.

3.6 Starting the Camera Using the Factory IP Address

In certain situations, it may become necessary to start the camera with its factory IP address. This could be the case, for example, if the IP address has been lost or the camera does not react to the last known IP address.

Passwords and camera settings will not be changed!

Proceed as follows to start the camera using its factory IP address:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the **"L" key** on the camera **within four seconds**.

The D22 also allows connecting an external speaker and microphone. The D22 does not have a built-in speaker or microphone.

- After about two more seconds, the camera plays a single sound ("Boing"), if an external speaker has been connected.

The camera is now accessible again using its factory IP address (see label on the camera housing).

Note

If you use the camera's **"L" key** to load the factory network configuration, this configuration is not automatically saved to flash memory. Upon restarting the camera the next time **without** using the camera's **"L" key**, the *last stored network configuration* will be used. To permanently store the new network configuration in the camera's flash memory, open **Admin Menu > Store ...**

Make sure you store the factory network configuration to the permanent flash memory

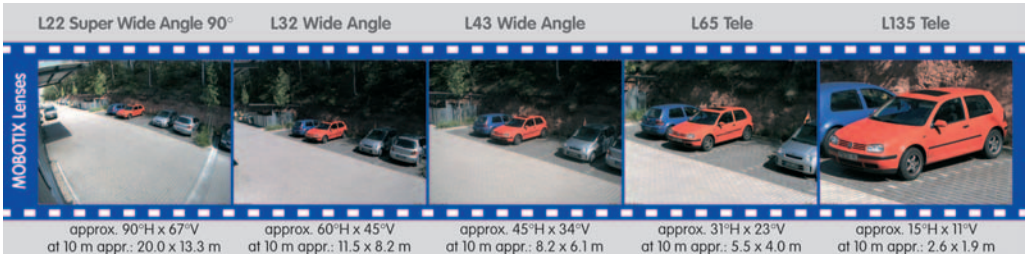
Caution

As opposed to resetting the camera using *Admin Menu > Reset configuration to factory defaults*, the user information will *not* be reset if the camera is booted using the factory IP address.

Users and passwords will not be changed!

D22M Camera Manual Part 1

	D22M-Basic Mx-D22M-Basic-D22	D22M-IT Mx-D22M-IT-D22	D22M-Sec Mx-D22M-Sec-D22	D22M-Sec-Night Mx-D22M-Sec-Night-N22
D22 Hardware Features				
Outdoor weatherproof (IP54/IP65)	IP54	IP65	IP65	IP65
Mono (M) / Dual (D)	M	M	M	M
Image sensor	Color	Color	Color	B/W
Resolution	**VGA**	**VGA**	**Mega**	**Mega**
Resolution horizontal x vertical	640x480	640x480	1280x960	1280x960
Max. frame rate CIF/VGA/Mega	16/16/-	30/30/-	30/30/10	30/30/10
Sensitivity at 1/60 second (Lux)	1	1	1	0.1
Sensitivity at 1 second (Lux)	0.05	0.05	0.05	0.005
Automatic night lens switch	-	-	-	-
Standard lens	L22	L22	L22	L22
Storage (MB)	**64**	**64**	**128**	**128**
Video ring buffer (MB)	2	32	64	64
CIF images approx.	100	2,000	4,000	4,000
VGA images approx.	50	1,250	2,500	2,500
Mega images approx.	-	-	800	800
Ethernet, ISDN, MxB, RS232	E /- / - /-	E /- / M /-	E /- / M /-	E /- / M /-
SD slots (MOBOTIX extensions)	-	1	1	1
Integrated microphone/speaker	-/-	-/-	-/-	-/-
Ext. audio (speaker/microphone)	-	X	X	X
Signal Input	-	-	-	-
Signal Output	-	-	-	-
Concealed cabling	X	X	X	X
In stock	Yes	Yes	Yes	Yes


L22 Super Wide Angle 90°
L32 Wide Angle
L43 Wide Angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V at 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V at 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V at 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V at 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V at 10 m appr.: 2.6 x 1.9 m

	Basic Models	Web Models	IT Models	Secure Models
Software Features (All Models)				
Digital zoom (2x, 4x) with panning		X		X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X	X/X
Custom exposure windows	X	X	X	X
Video Motion detection	X	X	X	X
Time and event control (FTP, email, logos)	X	X	X	X
Time tables with holidays		X	X	X
Web functionality (FTP, email)	X	X	X	X
Quad/MultiView in browser	X	X	X	X
Recording/Playback in browser	X	X	X	X
Logo generator, animations		X	X	X
Single image recording (pre-/post-alarm images)	3	3	10	50
Terabyte ring buffer (Win/Lin/Mac) via network			X	X
Continuous video/audio recording, 0.2 to 30 fps			X	X
Video/audio recording (event-triggered)			X	X
Event-controlled frame rate with continuous audio			X	X
Flexible event logic				X
Master/Slave arming by one camera				X
Scheduled privacy zones, several areas				X
Bidirectional audio (IP) from/to browser			X	X
Customized voice messages			X	X
VoIP telephony (Audio/Video, SIP)			X	X
Alarm calls to softphones (SIP) e.g. Xten			X	X
Remote alarm notification (via TCP/IP, IP Notify)			X	X
RS232 Data Logger/Terminal			X**/***	X**/***
Programming interface/HTTP API			X	X
Model Limitations				
Image size	VGA	Mega	VGA	Mega
Image sensor (color / BW)	Color	Color	Color & BW	Color & BW
Standard lens for software version	L22	L22*	L22*	L22*
Audio support (Microphone/Speaker)	-/-	-/-	M/S	M/S

The Web version is available only as M12 model

The Basic version is available only as D22M model

* The D22 also allows connecting an external speaker and microphone. The D22 does not have a built-in speaker or microphone.

* M12 models are delivered with L43 lens

** M22M models require the Cam-IO for this feature

*** Not available for D22M models

Declaration of Conformity

Konformitätserklärung gemäß dem Gesetz über Funkanlagen und Telekommunikationsendeinrichtungen (FTEG) und der Richtlinie 1999/5/EG (R&TTE)

Declaration of Conformity in accordance with the Radio and Telecommunications Terminal Equipment Act (FTEG) and Directive 1999/5/EC (R&TTE Directive)

Déclaration de conformité selon la loi sur les équipements hertziens et les équipements terminaux de télécommunication (FTEG) et la directive 1995/5/EC (R&TTE)

Hersteller/verantwortliche Person: Manufacturer/responsible person: Fabricant/personne responsable :	MOBOTIX AG
erklärt, dass das Produkt: declares that the product: déclare que le produit :	Netzwerk-Kamera Network camera Caméra de réseau
Typ: Type: Type :	D22M
Telekommunikations(Tk-)endeinrichtung Telecommunications terminal equipment Equipement de terminal de télécommunication	Netzwerk-Kamera Network camera Caméra de réseau
Verwendungszweck: Intended purpose: Le but suivi :	Übertragung von Bildern und Toninformationen Transmission of images and audio information Transmission d'images et du son

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the essential requirements of §3 and the other relevant provisions of the FTEG (article 3 of the R&TTE Directive), when used for its intended purpose.
est conforme aux exigences fondamentales du paragraphe 3 du FTEG (article 3 du R&TTE) et des autres clauses s'y rapportant.

Gesundheit und Sicherheit gemäß § 3 (1) 1. (Artikel 3 (1) a))
Health and safety requirements pursuant to § 3 (1) 1. (article 3 (1) a))
Santé et sécurité conformes au paragraphe 3 (1) 1. (article 3 (1) a))

angewendete harmonisierte Normen: harmonised standards applied: normes harmonisées :	EN 60950:2000	(NSR 73/23/EWG & 93/68/EWG) (LVD 73/23/EWG & 93/68/EC) (Directive Basse Tension 73/23/EWG & 93/68/EC)

Schutzanforderungen in Bezug auf die elektromagn. Verträglichkeit § 3 (1) 2, Artikel 3 (1) b))
Protection requirements concerning electromagnetic compatibility § 3 (1) 2, (article 3 (1) b))
Exigences de protection concernant la compa tibilité électromagnétique, paragraphe 3 (1) 2; (article 3 (1) b))

angewendete harmonisierte Normen: harmonised standards applied: normes harmonisées :	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6	EN 55022, Class B EN 55024 EN 61000-6-2 EN 61000-6-3	(EMV-RL 1995/5/EG (R&TTE)) (EMCD 1995/5/EG (R&TTE)) (Directive EMC 1995/5/EG (R&TTE))

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Kaiserslautern, 15.03.2007

Ort, Datum
Place & date of issue
Lieu et date

Dr. Ralf Hinkel
Vorstand/CEO, MOBOTIX AG

Name und Unterschrift
Name and signature
Nom et signature

Notes:

Notes:

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All images in this manual are genuine MOBOTIX camera images.
Enjoy the image quality!

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Registration Number: HRB 3724

Tax Code: 19/650/0812/1
Tax Office: Kaiserslautern

VAT ID: DE 202203501

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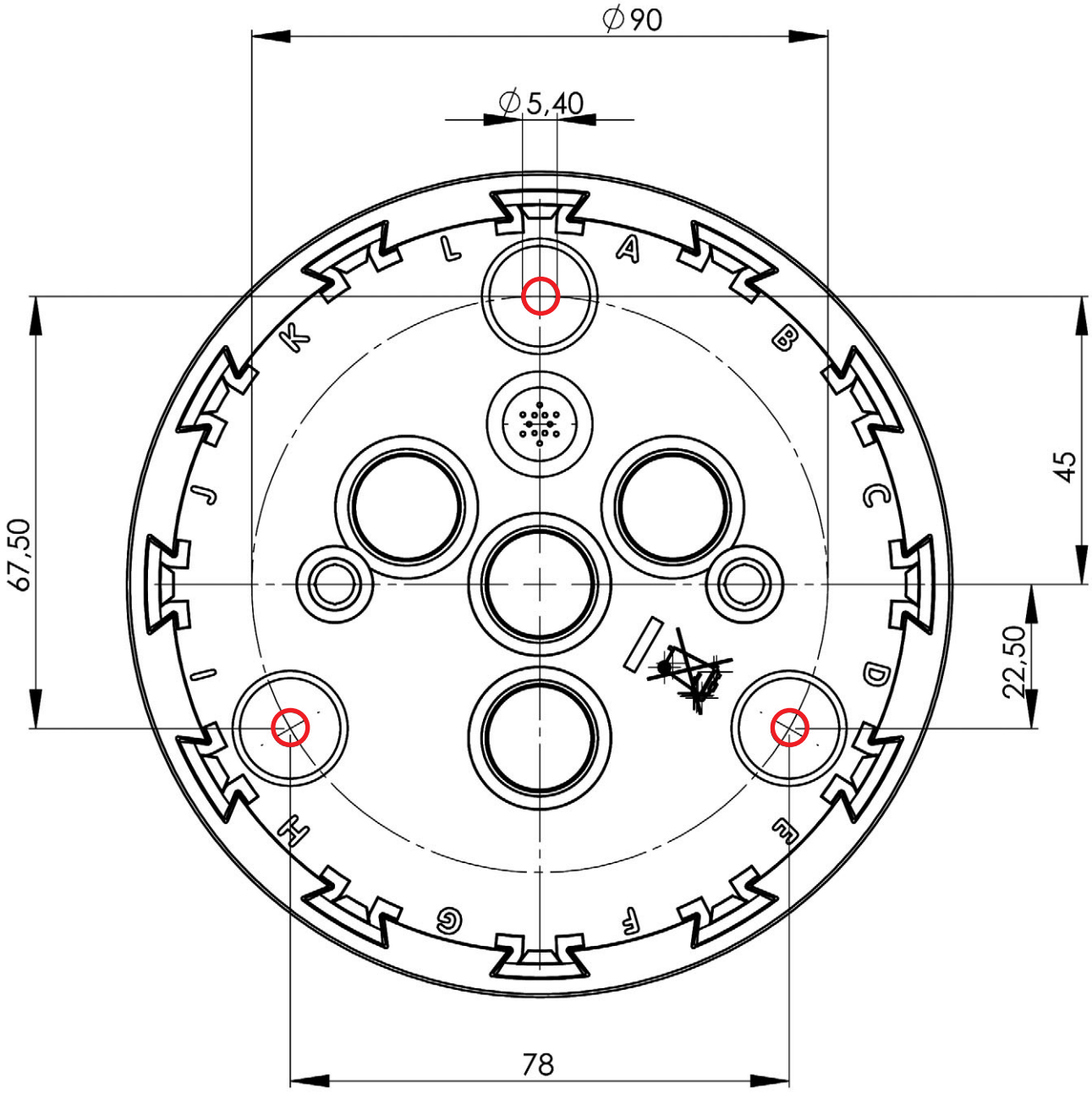
CE

Technical information subject to change without notice!

D22-BASIC: Drilling Template

Scale 1:1



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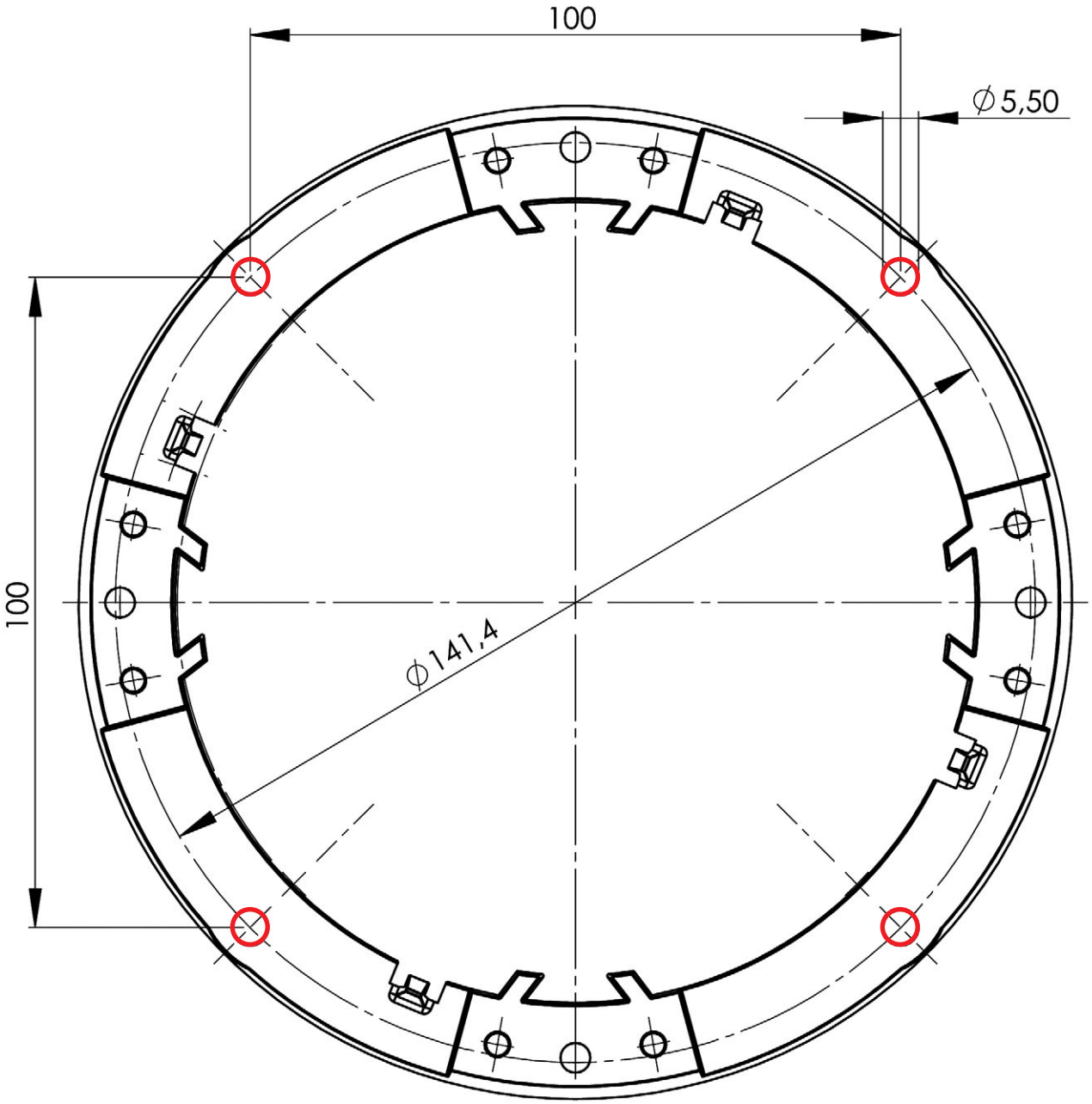
D22-IT/SECURE: Drilling Template

Scale 1:1



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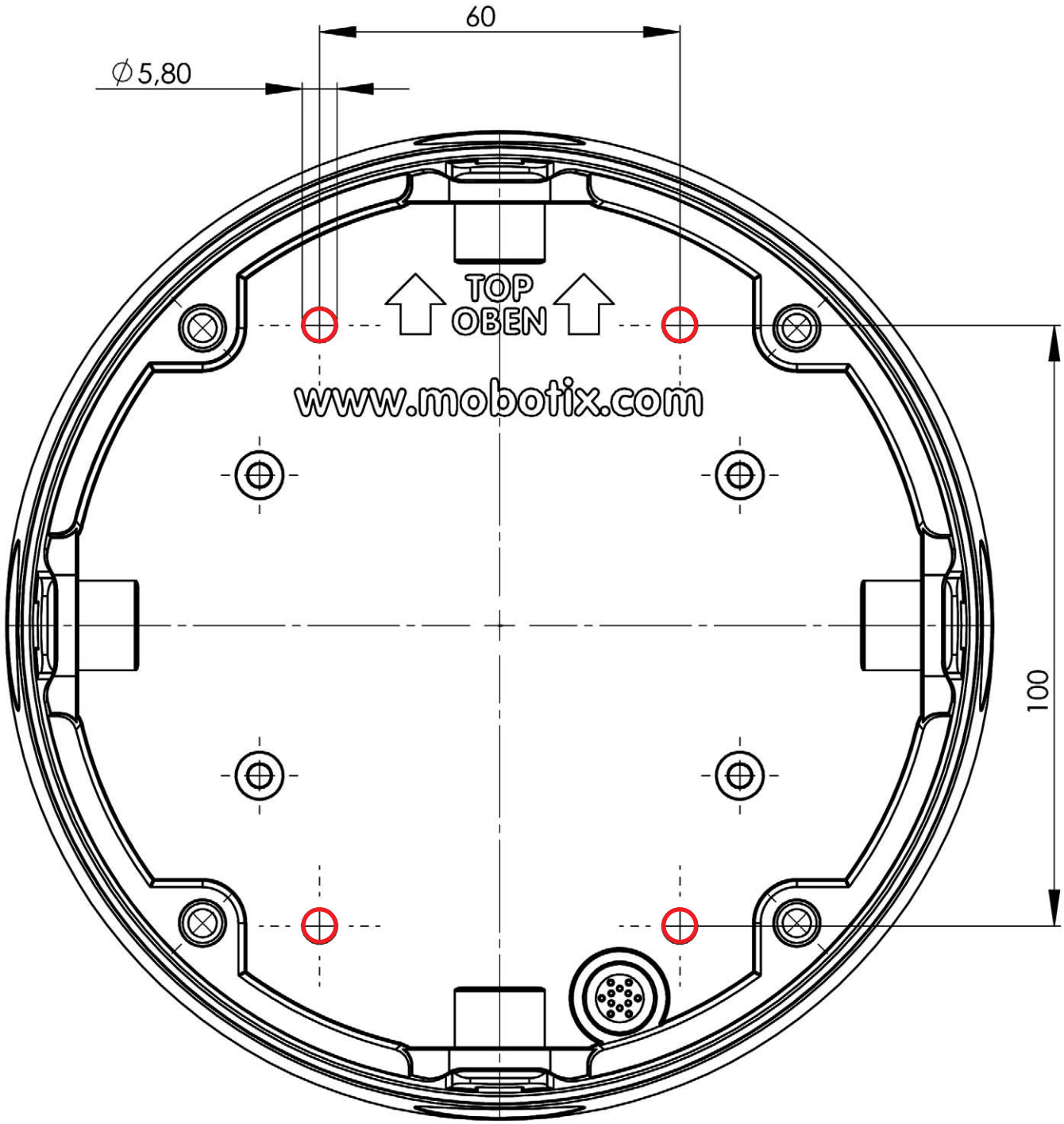
D22-On Wall Set: Drilling Template

Scale 1:1



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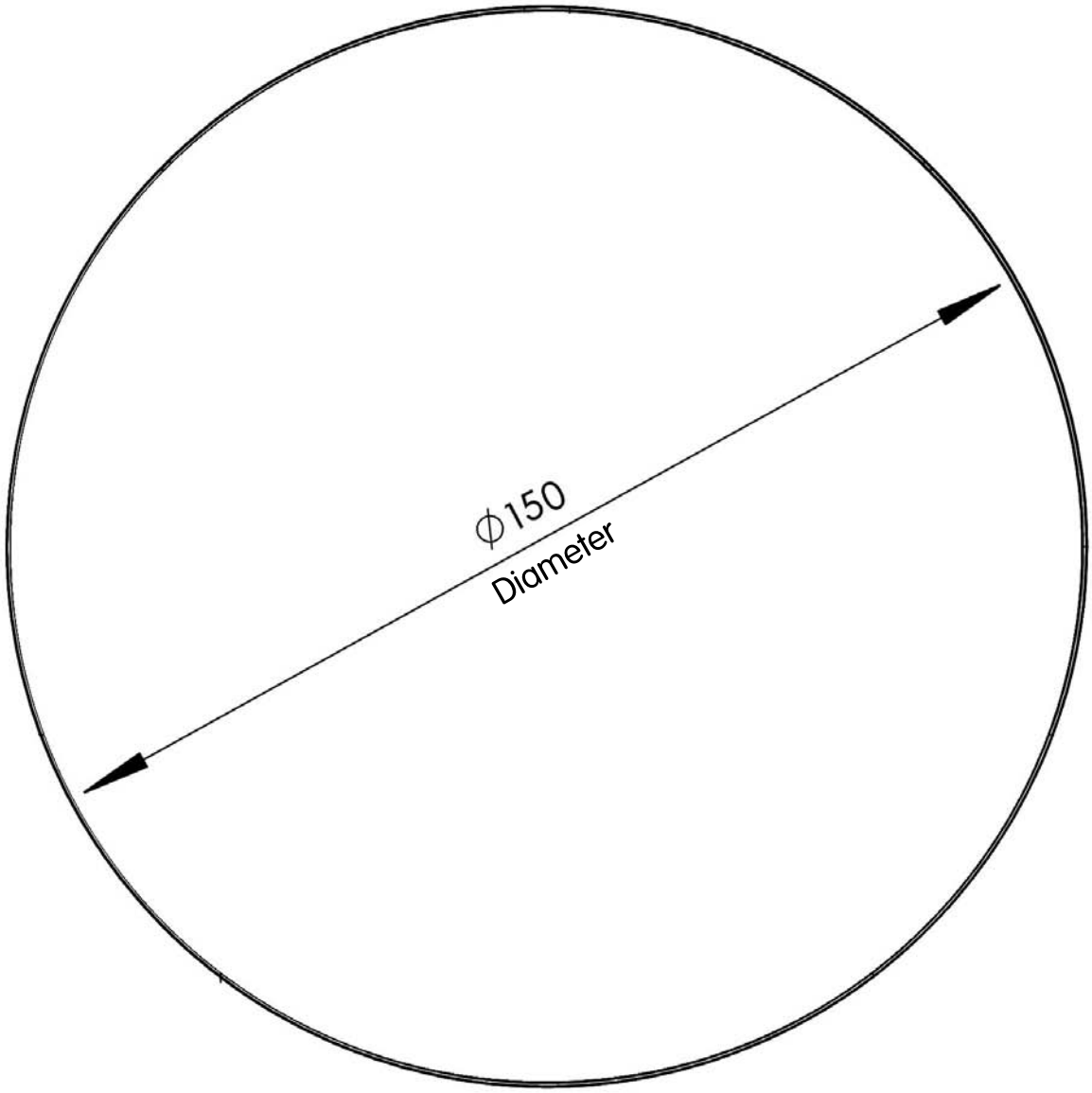
D22-In Ceiling Set: Drilling Template

Scale 1:1



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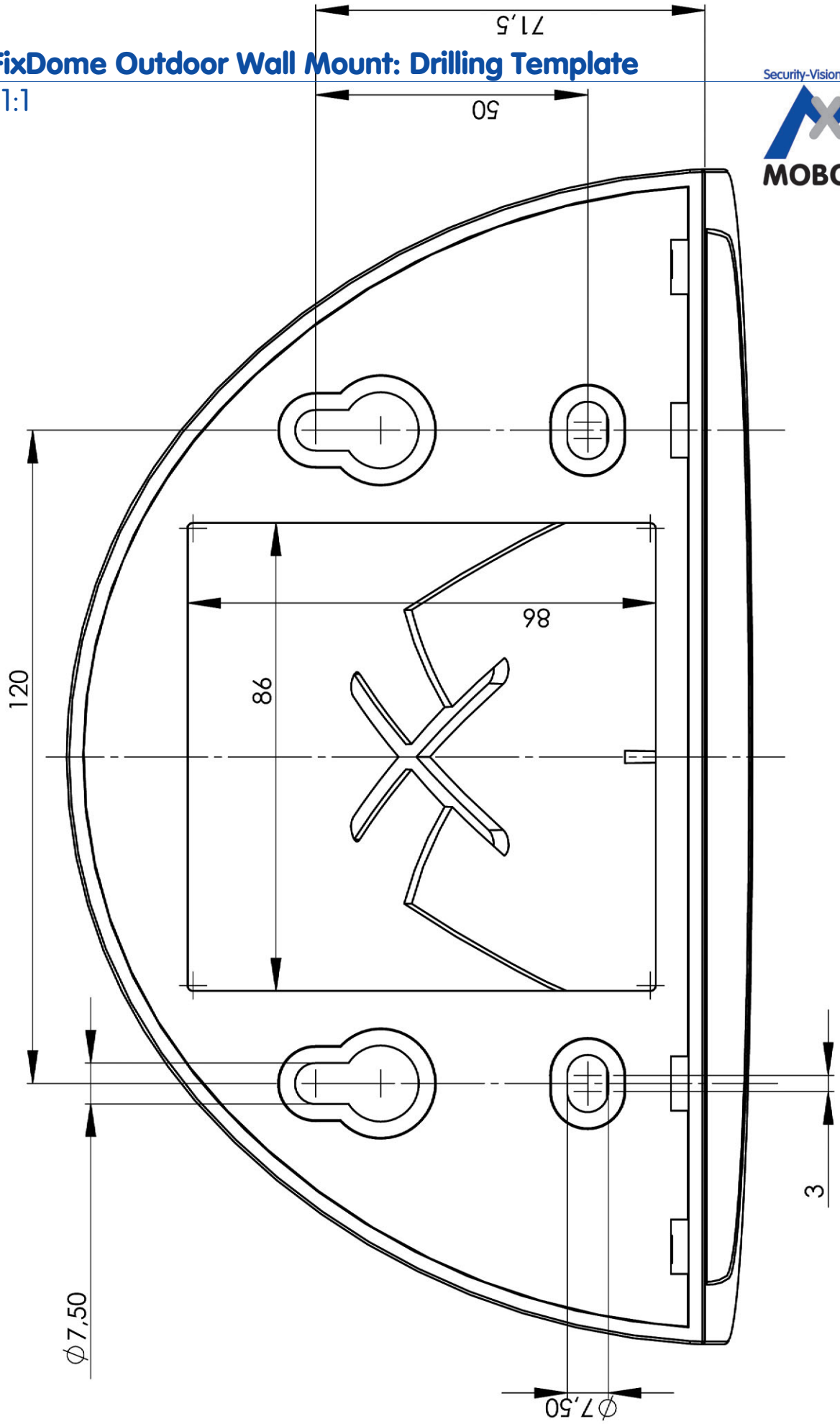
D22-FixDome Outdoor Wall Mount: Drilling Template

Scale 1:1



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Notes

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Megapixel
1280 x 960
software zoom

30 Frames/s
VGA (640 x 480)
10 fps Mega

-22°F to +140°F
Weatherproof
-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af
PoE
network power
even in winter

microphone & speaker
Audio
bi-directional via IP
variable framerates

Video SIP Client
IP Telephony
alarm notify,
cam remote control

Video motion
multiple windows
precision pixel-based

lip-syncronized audio
Recording
event-ringbuffer
30 cams each 30 fps

Live viewing
30 cams at 30 fps
all on one screen

Backlight
safe using CMOS
without mechanical iris

Vandalism-protected
Wall bracket
with cable cover
for RJ45 wall outlet

Robust
no moving parts
fiber glass housing

MX-CM-D22-EN-01

D22

Camera Manual

Part 1

Complete integration for web and security

Current PDF File:
www.mobotix.com > Support > Manuals

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